

Chemistry International

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)



AT THE BUREAU MEETING

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CHEMISTRY INTERNATIONAL

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)

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It was noted with relief that the previous Editor set the precedent of using the first person singular in his editorials. I shall do the same; not only is it an easier style but also indicates clearly that any opinions expressed are my own and not necessarily those of the Union. Apart from this, the form of this issue differs markedly from the *Chemistry International* (CI) that you have become used to: it is devoted entirely to IUPAC and its doings, rather like the old IUPAC *Information Bulletin* (IB).

As you may have read in CI 1982, No. 6, my terms of reference as temporary, part-time Editor are to produce a mainly IUPAC-oriented news magazine in as readable a style as possible. To achieve this object I shall need your help. Although I am an "old IUPAC man" and shall therefore be looking out for items that would have interested me as a Division member, my choice may not be your choice. I should appreciate your comments and suggestions so that I can build up a picture of what *you* like or dislike, ready for the next permanent occupier of the editorial chair.

In the old days my experience indicated that there were two distinct species of IUPAC member — those who read the IB and those that did not. The former found it a source of valuable information of IUPAC activities, especially of what other people were doing, heavy reading though it might have been; the latter seldom read carefully anything connected with IUPAC longer than a single page of double-space typescript. Will you help me to try to encourage both these types of people — to lessen the effort required from the first and to attract the second, if of course we now have any of them in the Union, to move on to the second page?

I see that the cry is still going up that the results of IUPAC work are not widely enough known, the usual remedy advocated being publication in 'outside' journals. I once asked a number of people, at what we used to call an IUPAC Conference, whether their Institution libraries subscribed to *Pure and Applied Chemistry*, or the *Information Bulletin*, or both. The (vast) majority response was "Don't Know" with "No" a clear second. I wonder whether the situation has changed! Perhaps, when (if) the Affiliate Membership Scheme becomes a successful fact of IUPAC life, sufficiently wide knowledge and recognition of IUPAC work will follow as a matter of course. Are national learned society journals no longer encouraged to reproduce IUPAC reports?

Having twice cast aspersions on my former Union colleagues, may I finally take this opportunity to greet any of them, especially those in Division V, that still remain. That is, I hope, the last piece of partiality that I shall show in my new (half-) job for IUPAC.

THE SECRETARY GENERAL'S COLUMN

Minutes of meetings of Council, of Standing Committees, of Division Committees and of Commissions are all published, some only in summary form. The minutes of Bureau and Executive Committee meetings are not. This could give the impression that the proceedings of such august bodies are not suitable, in one way or another, for promulgation amongst the common herd, that the matters discussed are too serious (or too trivial) to be the subject of possible comment by the uninitiated. Even if such thoughts had never occurred to the 'working class' of IUPAC, it seems a pity that no account of the efforts of 'the management' should be generally available, particularly as it is upon these efforts that the past and the future success of IUPAC depends.

To bring to the attention of readers some of the problems — and their solutions — that have to be considered by the Bureau (or Executive Committee), the Secretary General's Column is being introduced. Although it is unlikely to appear in every issue, it is hoped that it will be a fairly regular feature.

In this issue, some aspects are outlined of the Bureau's discussions at its meeting in Prague during September 1982 which may be of interest to readers engaged in IUPAC activities or otherwise interested in the activities of the Union. The members of the Bureau will be found in *Chemistry International*, Supplement 1982, p.9.

Freedom of participation

The granting of IUPAC sponsorship to an international symposium or conference guarantees freedom of entry to all *bona fide* scientists, irrespective of their political persuasion or nationality. Should a host country refuse to grant entrance, IUPAC will intervene to secure a visa and, if it is not granted, will withdraw sponsorship and refuse to support future meetings until more favourable circumstances prevail. Most countries have responded positively when IUPAC has requested them to expedite the granting of a visa where difficulties have occurred, and since 1975 in only two instances has sponsorship had to be withdrawn. Even in those instances, the Union was able to reinstate its sponsorship when the government of the country concerned did facilitate participation of the relevant scientists.

In all cases, the literature of the symposium or conference is required to carry a notice that visa applications should be made not less than three months before the event, and that the IUPAC Secretariat should be informed if a visa has not been granted within one month of the meeting.

At its meeting in Prague, the Bureau discussed an event related to this topic. A few days before the 28th International Symposium on Macromolecules (MACRO 82, Amherst, 12–16 July 1982), IUPAC was informed that two of

the invited speakers from USSR — Profs N. A. Platé and V. A. Ponomarenko — had not been granted entry visas to USA.

The circumstances were not clear but, at that late stage, it was ineffective for IUPAC to withdraw its sponsorship. Subsequently it emerged that the visa applications of the two Soviet chemists were only received at the US Embassy in Moscow one month before MACRO 82. This was much too late to implement IUPAC's '3 months–1 month' rule.

The Bureau agreed that, in future, if the Union learns of late non-granting of visas to any of its sponsored meetings, the official IUPAC representative should draw attention to the situation when he speaks at the opening ceremony. Meanwhile IUPAC emphasizes that all chemists should adhere to the '3 months–1 month' rule and advise the Secretariat of any breaching of the rule at the earliest possible moment, in order to protect the principle of freedom of access of all chemists to IUPAC-sponsored meetings.

Limitation of service on IUPAC

A matter of particular interest to those chemists who are already members of Division Committees or Commissions of the Union, or indeed others who may wish to become involved, concerns the total length of service on various IUPAC bodies. These discussions arose



Prof. N. Sheppard; Prof. C. N. R. Rao; Prof. S. Nagakura, President.



Prof. A. D. Campbell; Dr. W. Graulich, Treasurer.

out of a resolution raised by the National Adhering Organization of the Federal Republic of Germany at the 1981 General Assembly in Leuven. That resolution sought to limit the total period of service by an individual chemist on IUPAC bodies, and was particularly concerned to restrain the movement of individuals from one Commission to another within the same Division or between Divisions. The Statutes and Bylaws at present limit the length of service on a Division Committee to eight years or, in exceptional circumstances, to a maximum of ten years. Service on Commissions as a Titular Member is similarly limited. The spirit of the FRG resolution, which was referred by the Council at Leuven to the Bureau for further consideration, was to allow more people — particularly younger chemists — to participate. Fortunately, there are not many examples of the occurrence of excessive periods of service within IUPAC. Nevertheless the Bureau discussed the implications particularly in relation to areas of intense specialization, e.g. nomenclature and data compilations, where there may arguably on occasion be a need to retain experts for longer than normal periods. The Bureau was also concerned to ensure that whereas lateral movement between Commissions of a Division or even between Divisions should be restricted, there should be no impediment to movement upwards from Commissions to Division Committees and hence through the Bureau to the higher offices of the Union, where experience is particularly valuable. These matters are being reviewed in depth by an ad-hoc Committee under the chairmanship of Past-President Zollinger.



Prof. H. Zollinger, Past President.

In this connection it should be noted that, with effect from the Davos Assembly in 1979, no person in the Union may hold more than three commitments. Where such cases occur, an

individual is now asked to relinquish his 'excess' commitments.

It is interesting that these considerations arise virtually at the same time as the projected Affiliate Scheme (see pp. 6–10 of this issue of CI). These show that IUPAC is endeavouring to maximize the participation of chemists in its affairs and to ensure that its Divisions and Commissions are open to newcomers as fully as possible.

Data base involvement

IUPAC is a prolific publisher of recommendations on nomenclature and symbols and of books of data on stability constants, dissociation constants, etc. The *Solubility Data Series* presently being produced by the Analytical Chemistry Division is an outstanding example of such data compilations. So far, the Union has followed the traditional pattern of publishing its data compilations as monographs. Recently, however, the Publications Committee and the Bureau have deliberated on the viability of traditional publishing, e.g. the official journal of the Union, *Pure and Applied Chemistry*, because of present-day trends in book and journal purchasing by individual chemists. Another factor is, of course, the existence of computerized data banks and the increasing use being made of these by scientists



Dr. W. G. Schneider, Vice-President;
Prof. H. Gg. Wagner; Prof. J. Mathieu.

in general and chemists in particular. Should IUPAC consider publishing its data collections in such a non-traditional form, should it link with commercial or learned society activities in this area, can it afford to engage in such activities or, conversely, can it afford not to? These were questions discussed by both IUPAC bodies and will now be examined further by a Subcommittee under the direction of Vice-President Schneider. The outcome of the Subcommittee's discussions will be awaited with great interest.

Observer country status for Thailand

The Members of IUPAC are those countries whose National Adhering Organizations (usually Academies of Science, but sometimes National Chemical Societies) contribute to the Union's expenses according to a scale based, at present, on their annual chemical turnover (CT). Some countries do not come within the lower end of the CT scale or feel they cannot sustain the minimum annual 'due' currently US\$600 per year. At the Leuven General Assembly in 1981 the new status of Observer Country was introduced. The service charge for such status within IUPAC is US\$50 per year and entitles the country concerned to send an observer to the Council meeting, to receive the relevant



Prof. A. Perez-Masiá; Dr. H. Frehse;
Prof. D. B. Tonks; Prof. A. A. Viček.

literature and, where agreeable to a Commission or Division Committee, to send an observer to its meetings.

At the moment, there are 44 members of IUPAC (see inside back cover). The Union is now pleased to welcome Thailand (Chemical Society of Thailand) as its first 'Observer' country and looks forward to other countries becoming associated with IUPAC in this way. It is, of course, hoped that Observer countries will in due course participate as full members of IUPAC.

Dues structure of IUPAC

One of the major items of discussion by the Bureau was the manner in which the annual subscriptions (dues) are calculated for each member country. At present these are based on the chemical turnover (CT) for each country and a system exists for relating this to the membership category and number of votes for

each country. Basically, countries are allocated to Categories A1-A3, each of which has six Council delegates (6 votes), Categories B1-B3, with 4 delegates, Categories C1 and C2 with 2 delegates and Category D, 1 delegate. Category D countries, $CT = \$0.15 \times 10^9$, paid US\$600 per year in 1982, whereas Category A countries, $CT = \$140 - 42 \times 10^9$, paid US\$70,000-33,500. There are difficulties for some countries with the CT basis of assessment, principally because multi-national chemical companies on which much of their CT data is based are said in many cases to make no contribution to the country's IUPAC subscription through the Company Associate scheme. Thus, the Bureau and Finance Committee are considering modifications to the CT assessment scheme or the use of supplementary criteria where a member country has difficulties. Such criteria might, for example, be the number of chemical research papers from the country concerned, the total number of graduate chemists or even the number active on IUPAC bodies. At the present time the Bureau feels that CT is the best all-round criterion for assessing dues, but has asked the Finance Committee to look at the other criteria as factors which might be taken into consideration where necessary.

Another difficulty with the present dues assessment scheme has arisen from the sharp lines of demarcation, associated with large differences in dues, between the membership categories. This can cause serious difficulties for countries whose CT data lie close to the borderline between categories, with the result that a small annual fluctuation in CT can cause large variations in the annual dues for that country. The Bureau and Finance Committee are now considering a mathematical formula approach to dues assessment suggested by the UK delegation to the Council, initially in Davos 1979 and in more detail in Leuven 1981. The Bureau has asked for further elaboration of this approach but is, in principle, in favour of the



Prof. F. W. Sunderman; Prof. C. H. Bamford.

smooth curve approach of the mathematical formula, as is the Finance Committee. Both Committees are also considering a smoothing out of the sharp lines of demarcation in the number of delegates, viz. 6, 4, 2 or 1 by possibly introducing 6, 5, 4, 3, 2, 1, in future.

These matters relating to the dues structure will, with the Affiliate Scheme, form major items of discussion at the next General Assembly Meeting at Lyngby in 1983.

Lean years for IUPAC Divisions and Commissions

The cutback in IUPAC resources caused by recession in world trade forced the Bureau to

reduce the maximum number of Titular Members on Commissions from 8 to 6 and on Division Committees from 10 to 8 for the period 1981–1983. The Division Presidents at Prague expressed concern at the reduced international participation caused by this change and additionally at reduction in their budgets since 1979. Many Commissions have had to reduce the level of their activity considerably during the past four years. It is hoped that a more satisfactory dues structure will be adopted in 1983 to allow the essential functions of IUPAC — the scientific work of its Divisions and Commissions — to be restored to the pre-1979 level. This is a matter of grave concern to IUPAC.

IUPAC offers an open door to chemists of the World

In early 1979 the National Academy of Sciences of the USA asked IUPAC to discuss a proposal to permit a modification of its structure to allow individual memberships to promote closer ties between chemists in different lands. It was further suggested that some Divisions of the Union might undertake a pilot scheme for an experimental period. The, then, President of the Union, Prof. Georges Smets, referred this to two Divisions — Analytical and Macromolecular — for consideration before the Council meeting at Davos in September 1979. Neither Division was able to support the proposal as it was set out, but the Division Presidents discussed the matter further and submitted the following resolution to the Bureau and subsequently the Council at Davos:

“The Division/Section Presidents recognize and approve the spirit and general intention of the United States National Committee (for IUPAC) resolution and recommend that the Bureau should continue to examine ways and means of maximizing interaction between the Union and chemists throughout the world.

However, having consulted their colleagues and discussed this item at length, they do not favour an experimental modification of the IUPAC structure to permit individual membership of Divisions as set out in the USNC document.

Signed: N. N. Greenwood, V. A. Kabanov, M. Roth, S. Sunner, H. Suomalainen, T. S. West, P. Yates”

The main reason for rejection was that the scheme, as set out, would have upset the structure of the Union, including the relationship between the Union itself and the member National Adhering Organizations (NAOs). It would also have interfered with the way in which the Divisions operate. An additional point was that the Division Presidents were less concerned with promoting closer ties between chemists than with strengthening the association of the world's chemists with the Union and its affairs.



Dr. T. S. West, Assistant Secretary General.

The Davos initiative

The Bureau and Council accepted the views of the Division Presidents and set up an ad-hoc group to explore alternative ways in which chemists might become more involved in the affairs of IUPAC. After due deliberation the group reported to the next Council Meeting in Leuven, September 1981, that it would, in its opinion, be possible to set up a scheme of Affiliate Membership of IUPAC which would allow individual chemists to become associated with the Union without interfering with the responsibilities of the NAOs of IUPAC, i.e. the Members, or the way in which the Divisions and Commissions of IUPAC operate their scientific affairs. To this end, the group, which drew its membership from Japan, Sweden, UK, USA and USSR with contributions from members of the 1979–1981 Executive Committee of the Bureau, i.e. from Belgium, Federal Republic of Germany, France, Japan, Poland, Spain, Switzerland and USA and from the Division Presidents, now including N. Sheppard, S. Itô and R. Gräsbeck, suggested a five-point plan to the Council via the Bureau at the Assembly in Leuven:

“The Council of IUPAC should consider urgently the introduction of an Affiliate Scheme to allow the world’s chemists to participate in the Union. The Affiliate Scheme would not interfere with the established relationship between the National Adhering Organizations and the IUPAC Council/Bureau structure or with the established working procedures of the Divisions and Commissions of IUPAC. All communications with IUPAC should take place through the National Adhering Organizations.

To facilitate the introduction of such a scheme it is proposed that:

1. Each National Adhering Organization (NAO) would be free to set up, or not to set up, an affiliation scheme.

2. An individual chemist could become an Affiliate of IUPAC through his NAO or, if considered appropriate by the NAO, through some other body such as a National Chemical Society.

3. A chemist living in a country that does not have membership status of IUPAC could become an Affiliate through his National Chemical Society.

4. Affiliates would be granted privileges within IUPAC in recognition of their support.

5. Affiliates would pay their dues through their NAO or National Chemical Society, according to national decisions.”

The Leuven endorsement

The Council, led by President Prof. Heini Zollinger, endorsed these principles and set up a Committee on Affiliate Membership to draw up a detailed scheme for consideration by the Bureau and the NAOs before the 1983 General Assembly of the Union. Furthermore, the Council approved a recommendation that the International Meeting of Chemical Society Presidents should become a group associated with IUPAC and that, as a preliminary

step, this group should be invited to meet alongside the General Assembly in 1983 and to attend the Council Meetings as observers.

The Belgrade approval

In September 1981 the International Meeting of Chemical Society Presidents at Belgrade welcomed the initiative of IUPAC and decided to suspend the activities of its own Study Group for the Formation of an International Chemical Society, pending the outcome of IUPAC’s deliberations in 1983.

The debate within IUPAC concerning a scheme of individual affiliation with the Union has gone forward in several other committees, including the Division Presidents, Finance Committee, Executive Committee and Bureau and, as readers of the December 1982 issue of *Chemistry International* (CI) will have seen, the position of CI itself has been discussed. Readers may be interested to learn of the conclusions reached so far by the Committee on Affiliate Membership but first of all, to appreciate the general background to their proposals, a few salient features of IUPAC should be highlighted to underline why it is felt that Affiliate Membership is desirable and, perhaps, even necessary.

The nature of IUPAC

IUPAC is a voluntary, independent, non-profit making, non-governmental association of national organizations, each of which represents the chemists of the 44 member countries of IUPAC. Its objectives are (1) to investigate and make recommendations for action on matters related to chemistry that need regulation, standardization or codification, (2) to co-operate with other international organizations dealing with matters related to chemistry, (3) to promote continuing cooperation amongst chemists of the member countries, and (4) to contribute to the advancement of chemistry in all its aspects.

The members are the NAOs of the (at present) 44 countries. Individual chemists may, with the consent of their NAOs, become Titular or Associate Members of the working Commissions of IUPAC by invitation. The work of the Union is overseen by a Council, consisting of NAO delegates, which meets every two years along with most other IUPAC bodies at a General Assembly of the Union. Between Council meetings the work is administered by an elected Bureau and an Executive Committee.

The scientific work of the Union is organized in Divisions of (1) Physical Chemistry, (2) Inorganic Chemistry, (3) Organic Chemistry, (4) Macromolecular Chemistry, (5) Analytical Chemistry, (6) Applied Chemistry, (7) Clinical Chemistry. Each Division has a number of Commissions concerned with, for example, nomenclature, electrochemistry, spectroscopy, etc. Commission Members are either Titular — in which case the Union makes a contribution towards their travel and subsistence costs to attend meetings, or Associates who are not entitled to subvention, but who usually graduate to Titular Membership in due course. The number of years of service on Commissions and Division Committees is, of course, limited to permit the recruitment of new members. The Commissions are funded to meet at least every two years at the General Assemblies and more frequently if necessary. Much

of the work is conducted by correspondence.

The Officers, and all who work on the Committees and Commissions of IUPAC, serve without pay, but the Union has a small permanent Secretariat in Oxford, UK. IUPAC is funded principally from the dues of the NAOs, by profits from its publications and by subscriptions from its Company Associates.

Many international bodies are associated organizations of IUPAC, e.g. Federation of European Chemical Societies, and, within countries, IUPAC has the support of many chemical companies — the Company Associates of IUPAC.

IUPAC is recognized internationally as the central authority for chemistry in most matters relating to nomenclature, rules of chemical terminology, symbols, atomic weights, etc. It acts as a consultative body on new nomenclature and provides advice on chemical matters to numerous authorities, e.g. WHO, FAO, UNESCO, ISO and EEC. Its reports and recommendations, prepared by the Commissions and Divisions, have been of great value and for many years have been accepted as both authoritative and definitive. In many countries the reports have formed the basis for the drafting of legislation or regulations relating to chemical manufacturing, international commerce and matters relating to food, health and safeguards against pollution. Most research and other journals in chemistry adhere to IUPAC terminology, rules and nomenclature.

IUPAC sponsors biennial International Congresses of Pure and Applied Chemistry, organized by one of the NAOs, and additionally each year a number of specialized symposia recommended or approved by its Divisions. An outstanding feature of IUPAC sponsorship of symposia is that it enables participation by *bona fide* chemists from any country without regard to race, religion or political philosophy, i.e. all governments recognize that IUPAC-sponsored events must be open to all chemists that wish to attend. IUPAC is, therefore, a truly liberalizing influence in chemistry.

IUPAC publishes its science journal, *Pure and Applied Chemistry*, 12 times per year. In addition to reports from IUPAC Commissions, it contains the plenary lectures presented at IUPAC congresses and symposia. The Union also publishes this 'house' magazine, *Chemistry International*, six times per year. This is distributed free to all members of IUPAC bodies. Definitive books on stability constant data, ionization constants of acids and bases, an extensive series on solubility data, compendia on the nomenclature of analytical, inorganic, organic and physical chemistry, etc., are also published and updated regularly.

The proposed scheme of Affiliate Membership

From the foregoing discussion the reader will see that the only way at present that a chemist can interact with, or participate in, the affairs of the Union is by invitation. It is also apparent that only chemists who belong to the 44 member countries can at present be involved. It is perhaps less apparent that worldwide there are only about 1000 chemists in IUPAC. Concern with this restricted access of chemists to IUPAC's activities prompted the original

direction of the resolution of the Division Presidents towards opening out a much greater interface between chemists and the International Union that is responsible for their discipline, particularly in relation to others, e.g. mathematics, physics and engineering.

IUPAC is, therefore, proposing to set up an Affiliate Membership Scheme for several reasons, the chief ones being (1) to broaden its contact with the world's chemists and offer them the opportunity to interact with and have an input to the work of their International Union, (2) to disseminate IUPAC information and reports, etc., as widely as possible, and (3) to try to interest capable young chemists and provide a mechanism whereby they may become involved at an early stage in chemical matters of a scientific nature which are of vital international concern.

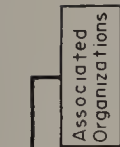
In return for this support of the Union, Affiliates would:

1. Be visible as potential recruits for the scientific work of IUPAC Commissions according to their expertise or specialization.
2. Receive six copies per year of *Chemistry International* which will contain news of IUPAC reports, new nomenclature, symposia, congresses, new developments, feature articles on IUPAC events and personalities.
3. Be entitled to obtain 10–20% reduction on the cost of all future IUPAC publications.
4. Be entitled to obtain at least 10% reduction on the registration fees of all IUPAC-sponsored symposia, congresses, etc.
5. Be entitled to communicate directly on scientific matters with Officers of IUPAC Commissions.
6. Be entitled to communicate with IUPAC members and other Affiliates on scientific matters via a correspondence column of *Chemistry International*.
7. Be entitled to concessionary air fares to attend IUPAC symposia. This would be arranged by IUPAC or locally by a National Affiliate Group.
8. Be entitled to belong to a National IUPAC Affiliate Group if such were to be set up by their Chemical Society.
9. Be entitled to wear the IUPAC neck-tie, etc.
10. Be entitled (when applicable) to reduction of income tax since the IUPAC due would be a component of the subscription to their Chemical Society.

The cost of Affiliate Membership

It is the intention of IUPAC that it would make a basic charge for each Affiliate Member enrolled. This charge would be sufficient only to meet the cost of the scheme to the Union. A preliminary estimate for this is US\$10, but if there were to be sufficient support, worldwide, it could be as little as US\$3. Each Chemical Society (or NAO) which operated the Scheme would probably need to make a supplementary charge to cover its own costs. The sum of the two costs would establish the national subscription. Since it is intended that Affiliates' copies of CI would be mailed directly by Chemical Societies with their magazines or journals, it is possible that this compo-

President



nent would be kept down to approximately US\$5. Thus, depending on the response in 1984–1985, the total cost of being an Affiliate Member of IUPAC could be in the range US\$10–15.

The individual decision

The decisions taken by IUPAC and the recommendations made in its reports profoundly influence chemistry, e.g. all branches of chemistry, pure and applied, the name of 'new' chemical elements, the value of relative atomic masses — and even if the last may still be called "atomic weights" (or Daltons!). IUPAC stands for, and represents, chemistry on an international independent scientific basis and, being one of the largest International Scientific Unions, it has an important role to play in interdisciplinary matters of terminology and regulation with engineering, biology, physics, earth sciences, astronomy, etc., which affect all chemistry. Most chemists know little about IUPAC, few have an influence on it and some even regard it as a charmed circle or private club. So, IUPAC has proposed this scheme to maximize the participation of the world's chemists in its affairs. If accepted, it would, in 1984–1985, for the first time make it possible for individual chemists to react voluntarily to their International Union, to give it moral support, to make their scientific views known and their presence visible to the Union. In return, each Affiliate would be kept up to date with the latest news of IUPAC's activities six times per year via receipt of CI and be entitled to the other benefits set out above.

The Lyngby decision

The present situation is that the conclusions and recommendations of the Committee on Affiliate Membership have been approved in principle by the Executive Committee and Bureau of the Union and were communicated to all the National Adhering Organizations of IUPAC in October 1982. In addition, several NAOs agreed — without commitment — to allow the Union to approach their Chemical Societies to poll their membership in 1982. This survey is now being concluded and analysed and should give some idea of the support that might be forthcoming should the Council at Lyngby in August 1983 approve a Scheme of Affiliation of individual chemists. If approval is given it should be possible for the NAOs, or Chemical Societies, or both, to launch a detailed scheme with effect from late 1984 or early 1985.

Chemistry is an experimental science and it is in the best traditions of the subject that IUPAC has proposed the present experiment. It is the conclusion of the committees concerned that this exercise should be undertaken and that the opportunity should be offered to individual chemists through their NAOs.

It is hoped that the NAO delegates will vote in favour of the scheme at the IUPAC Council in August and that subsequently chemists will avail themselves of the opportunity presented to them as individuals to become voluntarily associated with IUPAC, to the benefit of both parties.

T. S. West
Assistant Secretary General

RECENT REPORTS

Recommendations for the usage of selective, selectivity and related terms in analytical chemistry

The terms selective and specific, and their substantives selectivity and specificity, are being used in analytical chemistry with different meanings. It is the aim of this paper to provide guidelines for the use of these terms. As selectivity and specificity are closely related to the concept of interference, the paper starts with a short discussion on this term, resulting in a conclusion that a separate paper on the classification of interferences ought to be prepared at a later stage.

It is proposed to use the adjectives selective and specific and their substantives selectivity and specificity, when not followed by another substantive (such as factor, coefficient, etc.) as a means to express, *qualitatively*, the extent to which other substances interfere with a determination. For a quantitative characterization of the selectivity of an analytical procedure a combination of the term with another substantive is proposed, so that it is clear that a numerical quantity is meant, e.g. selectivity number, selectivity index or selectivity coefficient.

The term coefficient should be used for numerical values which occur in equations of proportionality, whereas number and index should be used when the dimension is unity ("dimensionless").

This report from Commission V.1 will be published in *Pure & Appl. Chem.*, Vol. 55, No. 3 (March), pp. 553–556 (1983).

Glossary of terms used in physical organic chemistry

The Glossary gives a fairly comprehensive alphabetically arranged list of definitions of terms. It aims to provide guidance on physical-organic chemical terminology and to achieve consensus on the definitions of useful terms in current use and the abandonment of unsatisfactory ones. Terms satisfactorily covered in standard dictionaries or text books or in other IUPAC terminology reports are excluded, as are named reactions (such as Diels–Alder) and symbolic representations of mechanisms (S_N1 etc.). Typical terms included in the Glossary are: abstraction reaction, acidity function, ambident, antarafacial, carbenium ion, chemical flux, chemical species, colligation, contributing structure, cryptand, detailed balancing, electrocyclic reactions, electrophilicity, entropy of activation, frontier orbitals, geminate recombination, general acid catalysis, homoaromatic, hyperconjugation, ion-pair return, kinetic equivalence, molecular rearrangement, oxidation, rate-limiting step, telomerization, transient.

The report was prepared by a Working Party of Commission III.2, with contributions by over 140 individually consulted experts, and will be published in *Pure & Applied Chemistry* in mid-1983.

Recommendations on the use of the term amplification reaction

An amplification reaction is defined as one which replaces the conventional one used in a particular determination so that a more favourable measurement can be made. Where the constituent to be determined is amplified and this constituent is finally measured, the reaction is classed as direct amplification; indirect amplification is where the constituent required is associated with some other constituent which is then amplified and measured. Other reactions where an enhanced measurement is obtained without amplification of the measured constituent should not be classed as amplification reactions.

This technical report by Commission V.1 was published in *Pure & Applied Chemistry*, Vol. 54, No. 12 (December), pp. 2553-2556 (1982).

Standard methods for the analysis of oils, fats and derivatives, 6th Edition. 1st Supplement: Part 6 (1982)

This report includes seven analytical methods, three in Section II (Oils and fats) and four in Section III (Glycerines):

Section II — Determination of erucic acid;
Determination of linoleic acid;
Solid content determination in fats by NMR.

Section III — Measurement of colour in Hazen units;
Determination of sulphated ash content;
Determination of the relative density 20/20 in air and of the conventional mass per unit volume;
Determination of the acidity and the saponification equivalent.

This technical report from Commission VI.3 was published in *Pure & Applied Chemistry*, Vol. 54, No.12 (December), pp. 2759-2784 (1982).

The influence of acrylic processing aids on the rheology and structure of PVC

High molecular weight acrylic polymers enhance the processability of PVC especially by increasing their extensibility and suppressing various kinds of defects.

Eight industrial laboratories have collaborated in this joint investigation of the mechanism by which acrylic processing aids have their effect. The evidence available to the working party is consistent with the flow mechanism of PVC being a continual rupture and reformation process in the connective tissue between flow units which are approximately 100 nm in size. It is concluded that the acrylic processing aid is dispersed onto the boundaries of these particles

and that it acts there as a stress transfer agent distributing intense local stresses through larger volumes of the material.

This report was produced by Working Party 1 (Structure and Properties of Commercial Polymers) of Commission IV.2 and was published in *Pure & Applied Chemistry*, Vol. 55, No. 1 (January), pp. 177-190 (1983).

A critical appraisal of methods for the determination of vinyl chloride in workplace atmospheres

This paper was prepared by Commission VI.4. It does not provide a detailed description of an analytical method but, as the result of an appraisal of existing methods, provides guidance to the analyst in selection of optimum conditions, especially for the sampling of vinyl chloride in workplaces. Some information is also given on the toxicological effects of vinyl chloride, e.g. exposure, teratogenesis, mutagenesis, carcinogenesis and standards of hygiene.

Consideration has been given to sampling of vinyl chloride in workplace atmospheres by charcoal tubes and by glass syringes. The gas chromatographic analytical procedure is not described in detail but relevant literature references, compiled in cooperation with ISO TC 146, are quoted.

Detector tubes for short-term measurements (grab samples) and for long-term (time-weighted average) measurements are considered. An extensive evaluation of this method has been conducted, especially in the United Kingdom by the Vinyl Chloride Committee of the Chemical Industries Association, and has shown that such detector tubes are suitable for air testing at workplaces.

This report will be published in *Pure & Applied Chemistry* in mid-1983.

Thermodynamic functions of transfer of single ions from water to non-aqueous and mixed solvents. Part 1. Introduction, and the Gibbs free energies of transfer to non-aqueous solvents

The transfer of ions from one solvent to another or to a mixture of solvents is of general interest. Water has been selected as the reference solvent. Extrathermodynamic assumptions are required for the reporting of values for individual ions. The tetraphenylarsonium tetraphenylborate one has been used, since it is the most readily defensible.

The literature on the Gibbs free energies of transfer of ions has been surveyed to the end of 1980 and a critical evaluation has been made. The criteria for the weighting of the data are presented. The data are uniformly reported on the molar scale at 25°C

(except for sulfolane). The uncertainty limits of the selected data are indicated.

Numerical data are reported for the transfer of ions from water to D₂O, methanol, ethanol, 1-propanol, 1,2-ethanediol, other alcohols, ethers, acetone, carboxylic acids, 1,2-propandiol carbonate, formamide, dimethyl formamide and -acetamide and similar amide derivatives, acetonitrile and other nitriles, nitromethane and -benzene, *N*-methyl pyrrolidone, dimethyl sulfoxide, sulfolane, hexamethylphosphoric triamide and chlorinated hydrocarbons. Selected values are given for the specifically named solvents. Mono- and divalent ions are included, selected values are given for H⁺, alkali metals, Ag⁺, Tl⁺, tetraalkylammonium, tetraphenylarsonium, halides, I₃⁻, N₃⁻, CN⁻, SCN⁻, NO₃⁻, ClO₄⁻, picrate, and tetraphenylborate.

This report was prepared for Commission V.5 and will shortly be published in *Pure & Applied Chemistry*. Comments may be sent to Prof. Y. Marcus at the Department of Inorganic and Analytical Chemistry, The Hebrew University, Jerusalem 91904, Israel.

Compleximetric indicators, characteristics and applications

Compleximetric indicators comprise a group of substances with different chemical structures which possess the common property of changing their colour in the course of complexation of metals. Their rational use in titrations, as well as in other methods where they behave as chromogenic ligands, needs knowledge of their physicochemical properties. Such data being scattered in the literature are often insufficiently reliable and need comparison with other information for their critical evaluation. To present a comprehensive collection of data about compleximetric indicators was the primary purpose of the project developed by Commission V.1. From the great number of known indicators a choice has been made by the Commission, taking into account the most widely known and those which are not treated in other compilations.

The data include the chemical name, synonyms and formula of the indicator, its protonation properties as well as its most important spectral parameters. The data on metal-indicator complexes cover the stability constants and also spectral characteristics. This collection includes all data found in the literature, pointing out cases which seemed to be obviously erroneous or contrary to other, apparently more correct, data. Also, data termed as conditional constants have been included which were not properly defined in the original papers. They are given only to indicate that such systems have been preliminarily investigated. Where available, data on purification of indicators were included, as well as on purity control. For each indicator information is given about preparation of the reagent for titration purposes and the ions for whose determination the given indicator has been recommended are listed.

The indicators are alphabetically arranged in three groups: triphenylmethane derivatives (11 items), azo derivatives (9 items) and miscellaneous compounds (4 items).

This technical report will be published in *Pure & Applied Chemistry* in mid-1983.

Revision of the extended Hantzsch–Widman system of nomenclature for heteromonocycles. Recommendations, 1981

The Hantzsch–Widman system is one of the most useful methods in organic nomenclature for naming most heteromonocycles having no more than 10 ring atoms. For example, a seven-membered, fully saturated, heterocycle compound containing one oxygen atom is named oxepane by this system. The system has evolved over several decades resulting in a number of inconsistencies and limitations to its use for all heteromonocycles. The scope of the system gradually broadened, requiring the introduction of exceptions and special treatments for certain kinds of heteromonocycles.

As part of a broad study of organic ring nomenclature, Commission III.1 recently completed a revision of the Hantzsch–Widman system, proposing changes intended to resolve difficulties apparent in the system as documented in the current edition (1979) of its rules (*Nomenclature of Organic Chemistry*, Sections A–F and H, Pergamon Press, Oxford, 1979). The important changes are:

1. The distinction between nitrogenous and non-nitrogenous rings has been largely eliminated.
2. The special terminations for four- and five-membered rings containing one double bond when more than one double bond is possible have been removed.
3. The use of the stems “-inine” and “-inane” for six-membered rings where the stems “-ine” and “-ane” would be ambiguous have been proposed.
4. The number of elements precisely described by the system is increased to 19 by including the halogen elements needed for naming heteromonocyclic rings with cationic halogen ring members.
5. The use of the subtractive prefix “dehydro” for naming unsaturated heteromonocycles with fewer than the maximum number of non-cumulative double bonds is included.

It must be emphasized that these revised Hantzsch–Widman rules are *not* intended to prohibit the use of commonly used trivial names, such as thiophene, pyran, pyridine and morpholine. Heteromonocycles with more than ten ring members are named by replacement nomenclature.

These rules were published in *Pure & Applied Chemistry*, Vol. 55, No. 2 (February), pp. 409–416 (1983).

Guidelines for IUPAC projects

It has been said that some Commission projects must have been initiated to satisfy the personal whim of the Chairman, or to retain a member, or to introduce a friend into membership, or ... and so it went on, leading to the "charmed circle" referred to by Prof. Zollinger in Leuven. Questions were asked: what is the use of this work to industry, to research, to anyone? Of course, rightly or wrongly, we all suspected that these defamatory comments were made by the envious, the questions put by the ignorant. However, in order to avoid waste of valuable IUPAC (voluntary) time in replying to criticisms but primarily to make doubly sure that the limited resources of IUPAC are, and are seen to be, spent wisely, a set of guidelines for projects has been approved by the Bureau. These are:

1. General criteria

IUPAC projects should satisfy at least one of the following key criteria:

- 1.1 they should be related to the needs of the chemists in the world, not just in a country or a region,
- 1.2 they should be related to the role of chemistry for the needs of mankind,
- 1.3 they should best be approached by an international team such as IUPAC can assemble.

2. Examples

Thus, IUPAC projects can comprise:

- 2.1 Studies of problems of international nomenclature, symbols, terminology and conventions, as the need develops; this includes permanent activities (e.g. nomenclature of inorganic chemistry), or ad-hoc studies (e.g. the nomenclature of NMR signals, δ and τ).
- 2.2 Large future-oriented projects important for the position of chemistry in the world or for the needs of mankind (CHEMRAWN, teaching of chemistry, problems of publications or of computers, etc.).
- 2.3 Compilations of data best undertaken by an international team, for international use (e.g. solubility data).
- 2.4 Unification of "approved" experimental methods (in particular related to analytical problems, characterization of materials, etc.), in domains where the specialized organizations (ISO, EEC, NBS) are

not active, or in close cooperation with them, preferably as contract work.

3. Additional comments

- 3.1 The scientific or industrial importance of a field in chemistry is *not in itself* sufficient justification for its presence in IUPAC as a Division or Commission, although such relevance must be considered a criterion for continuing ongoing activities as well as for establishing new programmes.
- 3.2 The organization of symposia is *not by itself* justification for the existence of a Commission: it is part of the normal activity of the Divisions or of the group of Division Presidents, of course helped by suggestions from members of Commissions, Subcommittees and Bureau. Such IUPAC bodies are important as an International Advisory Committee for establishment of the scientific programme; all other organizational arrangements have to be made by a local (or national) committee.
- 3.3 An IUPAC project should be clearly defined as continuing or limited in time (which is the normal case), with initiation and tentative final dates, with a coordinator and a "budget" (depending on the case), in money, or/and in terms of number of meetings, or other investments of effort.

By ensuring that all projects fulfil these requirements, criticism should be minimized — not, unfortunately, stopped as there will always be somebody....!

DIVISION PRESIDENTS' REPORTS TO THE BUREAU

PRAGUE, 13-14 SEPTEMBER 1982

Division Presidents are required by IUPAC Bylaw 4.109 to present an annual report to the Bureau. Those presented at the Bureau meeting in Prague, 1982, are reproduced below, in some cases in slightly edited form, and describe the activities of the respective Divisions since the 31st General Assembly, Leuven, 1981. Mention is made in several of the reports to the Union's journal *Pure and Applied Chemistry*. For brevity this has been abbreviated to PAC in all cases.

I. PHYSICAL CHEMISTRY DIVISION

- I.1. Commission on Physicochemical Symbols, Terminology and Units.
- I.2. Commission on Thermodynamics.
- I.3. Commission on Electrochemistry.
- I.4. Commission on Physicochemical Measurements and Standards.
- I.5. Commission on Molecular Structure and Spectroscopy.
- I.6. Commission on Colloid and Surface Chemistry including Catalysis.

The activities of the Physical Chemistry Division of necessity cover a very wide range of topics and techniques within chemistry. In this report I shall emphasize the highlights in the form of a cross-Commission discussion of the main types of publication — mainly books or technical reports — that the Division contributes to the output of the Union.

Books with the IUPAC imprint can make a large impact on the scientific community. These usually contain compilations of data dispersed in the literature — often critical compilations — which are collected together by a group of IUPAC members. The Division's most general and perhaps most important book publication is the 'Green Book', i.e. the *Manual of Symbols and Terminology for Physicochemical Quantities and Units*, which is in the hands of **Commission I.1** for up-dating to a new edition (earlier editions appeared in 1969 and 1973, and the present one in 1979). The Commission is also planning to promote publication of the Green Book in languages other than English. All Commissions in the Division contribute information for this purpose, and **Commission I.2** has Appendix IV, which is concerned with thermodynamic and related subjects, in the course of publication.

Another important future IUPAC publication in book form will be a *Critical Compilation of Electrode Potentials* (a belated successor to Latimer's well-known book on this subject) prepared by **Commission I.3**. Publication has been agreed with Pergamon Press and the typescript is in final draft form. **Commission I.4** have for a considerable number of years produced a series of influential reports on *Recommended Reference Materials for the Realisation of Physicochemical Properties*. This

Commission is at present up-dating these, and adding information on methods, with a view to publishing a book on the subject.



Prof. N. Sheppard, President of Physical Chemistry Division.

Commission I.2, largely as a result of the work of Dr. S. Angus' Thermodynamic Tables Centre at Imperial College, London, have, in the course of publication in book form, a further volume (Volume 8, Chlorine) of the series *International Tables of the Fluid State* — with Volume 9, Fluorine, following shortly after. Since the General Assembly meeting at Leuven in 1981 the Division, through Dr. Angus, has been in contact with the European Federation of Chemical Engineers. As a result of this it is hoped that the chemical engineering fraternity will become more aware of the substantial help that IUPAC publications can give to their activities, and at the same time be able to influence the priorities within the work of IUPAC and particularly the Division.

Commission I.3 is also involved in two large data-compilation activities, relating *Conductance Data* and (Electrode and Solution) *Kinetic Data* in electrochemistry. The latter project has strong support

from the Japanese Government. In the first instance these are planned as computer-searched data bases. Some of the work of the Thermodynamic Tables Centre has previously been made available in computer as well as in book form, and the former method will undoubtedly become increasingly important in the future. IUPAC will need to consider how it can best obtain royalties from such compilations. Newer data-compilation projects which are at preliminary stages are those on *Fluid Phase Equilibrium Data for Mixtures* and *Transport Properties* (of fluids), both under the aegis of **Commission I.2**. The Subcommittee on Plasma Chemistry has completed a bibliography on *Thermodynamic and Transport Properties of Pure and Mixed Plasmas* which will shortly be published as an extended article in PAC. **Commission I.6** — as part of perhaps its most important single project at present — is working on a manual on *Catalyst Characterization*.

The second major activity of the Division is the production of shorter technical reports and recommendations — most of them for publication in PAC — dealing with definitions, terminology, abbreviations, symbols etc. concerned with a wide range of topics. Although less impressive in appearance than a book, and although technical in content, these reports collectively play an extremely important role in enabling different groups in related fields of chemistry (or in related sciences, through interactions with other organizations such as IUPAC, IUB, ISO and CIPM) to communicate effectively with each other. New and rapidly moving fields of science often adopt mutually inconsistent uses of terms, or their own jargons which are nearly unintelligible to others. Although the practitioners in fast-moving areas rarely say 'thank you' for IUPAC Commissions making choices between alternative terminology, nevertheless such recommendations form an important part of the discipline of the sciences.

Amongst reports and recommendations of the types discussed above which are being generated at present (or were recently completed) within the Physical Chemistry Division, I have picked out a number of highlights below. **Commission I.5**, largely concerned with molecular spectroscopy, has in the past mostly made recommendations to do with the photon spectroscopies. However, nowadays other particles, such as electrons, neutrons and sometimes ions, are increasingly being used to obtain information about molecular energy levels, often with high sensitivity if less resolution. In particular **Commission I.5's** recommendations are being prepared on

Symbols, Terminology and Applications for Electron Spectroscopies and (in collaboration with and on the initiative of **Commission I.6**) on terminology, much of it spectroscopic, concerned with the fast-developing field of *Chemical Physics of Surfaces*. The latter Commission (I.6) has in the course of publication reports on *Terminology and Symbols of Light Scattering* and, in manual form, on *Reporting Experimental Data for Solid-Gas Adsorption*. As mentioned earlier, this Commission is starting an important project under the general heading of *Catalyst Characterization and Standardization* which will include accounts of standard methods and procedures. It is thought that this activity of the Division will be of substantial importance for industrial laboratories and possibly to the Applied Chemistry Division.

Other projects of interest include the preparation of an abbreviated form of the Green Book for dissemination as widely as possible (**Commission I.1**), nomenclature reports on *Adsorption at Electrified Surfaces*, *Surface Films*, and on *Semiconductor Electrodes* (by **Commission I.3**), *Recommendations for Symbols and Nomenclature in Raman Spectroscopy* and a general review of *Conventions and Notations for Molecular Spectroscopy* (by **Commission I.5**) and a report on *Thermal Treatment of Particles under Plasma Conditions* (Plasma Chemistry Subcommittee).

Finally, **Commission I.4** is preparing a report on *Precision and Accuracy in Measurement as Applied to Reference Materials* and an *Annotated Bibliography on Precision and Accuracy*, following an excellent recently published report of this type from **Commission I.2** on thermodynamic measurements.

Since my last annual report I have to report, with great regret, the deaths of Prof. N. Ibl, past chairman of **Commission I.3** and a member of the Physical Chemistry Division Committee, of Mr. J. B. Armstrong of the Thermodynamic Tables Project Centre who contributed much to the IUPAC International Thermodynamic Tables set of volumes, and of Dr. G. T. Armstrong of **Commission I.2**. Each of these gentlemen had contributed much to IUPAC activities. Dr. G. T. Armstrong, under the aegis of **Commission I.2**, had been planning a book on *Critical Evaluation of Thermodynamic Data* together with Prof. E. F. Westrum, Jr. This project is at present in abeyance.

N. Sheppard

II. INORGANIC CHEMISTRY DIVISION

- II.1. Commission on Atomic Weights and Isotopic Abundances.
- II.2. Commission on Nomenclature of Inorganic Chemistry.
- II.3. Commission on High Temperature and Solid State Chemistry.

Activity within the Inorganic Division has been quite high. The Division President has reviewed all of the

Divisional activity reports as they were prepared for submission to the IUPAC President for the 'Critical Evaluation' programme and has approved several international conferences for IUPAC sponsorship. Up-to-date Divisional rules were printed and distributed to all appropriate interested parties and plans were made for the Lyngby Assembly meeting.

Commission activities

All three Commissions of the Inorganic Division have been active during the period since the Assembly Meeting in Leuven. Their activities will be

reviewed by the Executive Committee of the Division when it meets in Budapest, Hungary, at the International Conference on Coordination Chemistry (ICCC) the week of 22 August. The reports from the individual Commissions follow.

The members of **Commission II.2** and the appropriate working parties have continued their efforts to complete the revisions of the 'Red Book' (*Nomenclature of Inorganic Chemistry*) during this IUPAC biennium. The Commission had planned to meet before the ICCC meeting in Budapest but had to change plans due to insufficient funding. The meeting will take place in Paris from 28 August to 1 September. At this meeting the Commission will review in detail the work of the various working parties where drafts of the chapters of the Red Book revision will be available. Several chapter drafts have already been circulated to the Commission members for informal comments. A report of the progress of the Commission will be issued after the meeting.

Since the 31st General Assembly in Leuven, Belgium, **Commission II.1** has been involved in the following activities:

(1) The 1981 Report has been drafted, reviewed and is being corrected prior to being sent to IUPAC for publication.

(2) Preparations are being made for the interim meeting of the Subcommittee for the Assessment of Isotopic Composition (SAIC) at the Brookhaven National Laboratory in New York in August. SAIC members are preparing an element-by-element review of all changes which have been made since 1961 to atomic weight values based on assessment of published physical and chemical data.



Dr. Mary L. Good, President of Inorganic Chemistry Division.

(3) A table of atomic weight values to four significant figures has been drafted and is being reviewed prior to submission to the Committee on Teaching of Chemistry (CTC) for their use. CTC requested this table at the Leuven General Assembly.

(4) Comments have been provided to the Interdivisional Committee on Nomenclature and Symbols (IDCNS) at their request on (a) the proposal to use the dalton (Da) as an alternative name and symbol for the unified atomic mass unit, (b) the problem of the name 'atomic weight' and (c) a document from the International Organization of Legal Metrology.

Since the last meeting in Leuven, 26–29 August 1981, members of **Commission II.3** have been actively engaged in the following projects:

Thermodynamic and Transport Properties of Alkali Metals (R. W. Ohse)

Bibliography of High Temperature Chemistry and Physics of Materials (M. G. Hocking)

IUPAC Thermochemical Data Bank (C. B. Alcock)

Reference Electrodes in Solid-State Electrochemistry at High Temperature (A. M. Anthony and J. Corish)

Melting Points of Refractory Oxides (J. Hlavac and J.-P. Coutures)

Characterization and Terminology of Carbon (E. Fitzer)

Carbide-Carbon Secondary Temperature Standards (K. L. Komarek)

Properties of SiC and Si₃N₄ (G. Petzow and R. Sersale)

The final table of contents of the *Handbook on Thermodynamic and Transport Properties of the Alkali Metals* has been completed, the first draft of 14 chapters has been written, and the rest (46 chapters) is expected by the middle of 1982. The manuscript of the entire volume is expected to be available by the middle of 1983 (R. W. Ohse).

Publication of the *Bibliography of High Temperature Chemistry and Physics of Materials* is an ongoing and self-supporting activity of the Commission with 190 paying subscribers at the annual rate of £7.50. The possibility of incorporating the reference of the bibliography in the *Bulletin of Chemical Thermodynamics* (**Commission I.2**) is being explored (M. G. Hocking).

Thermodynamic data of more than 1000 inorganic compounds of the *IUPAC Thermochemical Data Bank* are available on tapes. The data for the elements will be reviewed by September 1982 for publication in the bibliography (C. B. Alcock).

The results of the first report on *Reference Electrodes in Solid-State Electrochemistry at High Temperature* have been critically analysed and in some cases further measurements under carefully controlled conditions are being carried out. A final report for publication is expected during 1983 (A. M. Anthony and J. Corish).

The report on *Melting Temperatures of Refractory Oxides Part I* has been published in PAC, Vol. 54, No. 3, pp. 681–688. Part II is in preparation, and a cooperative experimental re-examination of the melting points of HfO₂, CaO and Gd₂O₃ is in progress (J. Hlavac and J.-P. Coutures).

The Subcommittee on *Carbon and Graphite Characterization and Terminology* has worked out definitions of 30 terms (out of a total of 160) and is preparing definitions of 30 more terms. The definitions of all 160 terms will be published in the form of a scientific manual (E. Fitzer).

High purity materials for *Carbide-Carbon Secondary Temperature Standards* have been received, the preparation of the samples has commenced, and the specimens should be ready by autumn 1982 (K. L. Komarek).

The specification and properties of SiC and Si_3N_4 have been critically examined, and a report will be given at the next Commission meeting. Further

studies of the materials based on various Si_3N_4 solid solutions will be mapped and decided upon (G. Petzow and R. Sersale).

The working group on the *Nomenclature of Non-Stoichiometric Compounds* will hold a meeting in June in Paris (R. Metselaar and J. Corish).

The Commission has the policy that each member should lead or at least contribute to one major project. At the next meeting in Baden-Baden, 1–3 October 1982, several surveys initiated at the Leuven meeting will be assessed and, if agreed upon, submitted as new projects.

M. L. Good

III. ORGANIC CHEMISTRY DIVISION

- III.1. Commission on Nomenclature of Organic Chemistry.
- III.2. Commission on Physical Chemistry.
- III.3. Commission on Photochemistry.
- III.4. Commission on Medicinal Chemistry.

Commission activities

Commission III.1 is very active and is working on 15 projects, reflecting the urgent need to systematize organic chemical nomenclature. Most of the projects are long-standing ones, other are concerned with the exploration of new approaches to cope with the problems arising from computerized search of the literature.

Although I would not recommend discontinuation of any of the projects, I feel that there are too many to be handled efficiently.

The Commission will meet in August 1982 in Heidelberg.

Commission III.2 had 12 projects in hand: however, one project has been discontinued, another one is almost completed and two will be merged into one. Therefore there will be nine projects. All of them are interesting and correspond to a clear need for rationalizing the nomenclature of chemical transformations.

I recommend that this Commission also should not open further projects until some of those now in progress are completed, or nearly so.

The Commission met in July 1982 in Louvain La Neuve (Belgium).

Commission III.3 has five projects under way. The limited number of projects relative to that of the other Commission should not be considered as indicating lack of effort. The projects are sound, they progress well and the publication of the results will be of much interest for the scientific community.

The Commission will meet in July 1982 in Pau (France).

Commission III.4. The work of the Commission has been reviewed by a study group (Cavalla, Mathieu, Musso) which met in November 1981 in Paris.

Since no constructive comment on its report was received from the Commission, the Division President interviewed Dr. Timmerman, the Commission Secretary, to explain what IUPAC was expecting from the activity of the Commission. This meeting



Prof. J. Mathieu, President of Organic Chemistry Division.

was fruitless and the Commission still did not propose any project.

In a closed meeting in Toronto the members of **Commission III.4** decided to resign.

Organization of symposia

The Organic Chemistry Division promotes three series of symposia: Chemistry of Natural Products, Physical Organic Chemistry and Organic Synthesis.

The programme for these three series has been prepared up to 1986. The Division recommended IUPAC sponsorship for five symposia to be held in 1982 and for two symposia to be held in 1983.

The Division did not recommend IUPAC sponsorship for three symposia because of geographical restriction or for technical reasons.

J. Mathieu

IV. MACROMOLECULAR DIVISION

IV.1. Commission on Macromolecular Nomenclature.

IV.2. Commission on Polymer Characterization and Properties.

Since the 31st General Assembly in Leuven several IUPAC-sponsored symposia in the field of macromolecules have been held or planned.

12–16 July: 28th International Symposia on Macromolecules, Amherst, USA (IUPAC Macro 82).

19–22 July: 23rd Microsymposium on 'Selective Polymer Sorbents', Prague, Czechoslovakia.

29 August–2 September: International Symposium on 'Interrelations between Processing, Structure and Properties of Polymeric Materials', Athens, Greece.

A meeting of the Division Committee will be held during the Amherst Symposium.

Commission activities

The major activities of the two Commissions of the Division are outlined below. Dr. N. M. Bikales, Secretary of the Nomenclature Commission, represented the Division at the CHEMRAWN Committee Meeting in Washington, DC, USA on 20 February 1982.

All activities of **Commission IV.1** since the General Assembly at Leuven have been conducted by correspondence. The next meeting of the Commission will take place in Amherst following IUPAC Macro 82, July 1982.

A major portion of the Commission's activities during 1982 and 1983 will be the construction of an authoritative glossary of terms and list of definitions in macromolecular science, encompassing polymer solutions, crystalline polymers, melts and solid state. Draft documents are presently being prepared. A first draft on subsidiary terms and definitions in polymer chemistry is also in preparation. All these will be discussed at the next meeting.

It is intended to complete, at Amherst, the document on a *Classification System for Single-Strand Polymers*, which is now redrafted.

The final revision of the recommendations on copolymer nomenclature, intended as a comprehensive system, is in progress and will be considered at Amherst.

A logical development of this work on copolymers which has recently been initiated is the provision of systematic nomenclature for interpenetrating networks and polymer blends. A project on the nomenclature of ladder polymers, a development of the work on single-strand polymers, has also been started.

During the period under review members of the Commission have discussed and commented upon documents received from external bodies, including ISO.

At the 1982 General Assembly Dr. P. L. Clegg was appointed chairman of **Commission IV.2** in succession to Dr. J. W. Barrett. Subsequently, it was agreed that Dr. H. H. Meyer (Hüls) should be elected chairman of the Working Party on Structure and Properties of Commercial Polymers (WP 1), a position formerly held by Dr. Clegg. Formal handover



Prof. C. H. Bamford, President of Macromolecular Division.

will take place at the September meeting of the Working Party.

The next meeting of the Commission will be held in Berlin at the Bundesanstalt für Materialprüfung on 16 and 17 September 1982. A representative of ISO TC61 has been invited to attend.

The project on *Characterization of Polyelectrolytes*, approved in Leuven, has now been launched, initially as a sub-group of the Working Party on Molecular Characterization of Commercial Polymers (WP 2).

It involves 14 laboratories, both academic and industrial. Samples of a synthetic polyelectrolyte from a single batch have been distributed and work on characterization has started. A major objective is the comparison of different experimental techniques of characterization.

The recently formed Japanese sub-group of WP 1 has achieved a high level of activity. Members have considered a number of different topics and are currently working on two of these: *Rheological Properties of Model Materials for High-Impact Polystyrene at Elevated Temperatures*, and *Structure-Properties Correlation in Polyester Fibres Manufactured by High-Speed Spinning*.

Difficulties in finding a convenor have delayed the establishment of an Eastern European sub-group of WP 1, the person originally chosen being no longer available. It is hoped that a meeting between potential members of the sub-group will soon be held and will lead to the selection of a convenor.

Three papers from WP 1 have been, or are shortly to be, published in PAC:

Structure and Properties of Uni- and Bi-axially Oriented Polypropylene Films: Part 2 — Mechanical and Other End-Use Properties. A. J. de Vries, PAC, Vol. 54, No. 3, pp. 647–670 (1982).

Constitutive Equations from Gaussian Molecular Network Theories in Polymer Rheology. A. S. Lodge, R. C. Armstrong, M. H. Wagner and H. H. Winter, PAC, Vol. 54, No. 7, pp. 1349–1359 (1982).

A Collaborative Study of the Relation between Rheological Properties and Film Blowing of two LDPE and two HDPE Samples. H. H. Winter.

A report from WP 1 on the *Influence of Acrylic Processing Aids on the Rheology and Structure of Poly(vinyl chloride)* will be presented at the IUPAC-sponsored symposium at Athens in August 1982.

The sub-group of WP 1 on *Characterization and Estimation of Defects in the Molecular Structure of Poly(vinyl chloride)* will meet in Madrid during October. It is intended to submit a collection of reports for publication before the end of the year.

Several of the researches referred to above will be extended to other polymers. This is also true of the studies of WP 2 on *Molecular Characterization of Commercial Polymers*; the techniques used are being applied to ethylene propylene block copolymers and linear low-density polyethylene.

The Working Party on Kinetic Parameters for Free Radical Polymerization continues to make satisfactory progress. It is intended that the earlier work on methyl methacrylate and styrene should provide a basis for further studies covering a wider range of reaction conditions and monomers, ultimately of industrial interest. So far work has served to highlight problem areas.

Progress is being made by the Working Party on Supported Polymer Films. A draft report on the *Mechanism and Measurement of Adhesion* is expected by the end of 1982. Work on the *Analysis of Emulsion Paints* and the *Analysis and Stability of Amino Resins* continues.

The Working Party on Thermal Properties is making progress in its study of *Glass Transition Phenomena of Amorphous Polymers by DTA*; further programmes will be discussed during the first Working Party meetings in Amherst and Athens this year.

Some progress has been made in setting up the Working Party on Surface Properties of Films and Fibres. There is considerable interest in this area, especially in North America. A meeting will be held during IUPAC Macro 82 with the object of finding a convenor/chairman for North American sub-group and possible leaders for a European sub-group are being considered.

C. H. Bamford

V. ANALYTICAL CHEMISTRY DIVISION

- V.1. Commission on Analytical Reactions and Reagents.
- V.2. Commission on Microchemical Techniques and Trace Analysis.
- V.3. Commission on Analytical Nomenclature.
- V.4. Commission on Spectrochemical and other Optical Procedures for Analysis.
- V.5. Commission on Electroanalytical Chemistry.
- V.6. Commission on Equilibrium Data.
- V.7. Commission on Analytical Radiochemistry and Nuclear Materials.
- V.8. Commission on Solubility Data.

The activity of the Analytical Chemistry Division, including its eight Commissions, has, since the 31st General Assembly, Leuven, Belgium, followed the scheduled programme. However, due to financial restrictions and a decrease in the number of Titular Members, some projects have suffered, either by being shelved because of incompleteness or incompatibility with current analytical practice, or by having priorities reduced after review by the relevant Commissions. An attempt has nevertheless been made by Commission and Division members to continue studies in progress, to complete certain projects and to propose new developments.

The main work and guidelines which render the Division's activities 'concrete' should perhaps be extracted without entering into fine detail on programmes and projects. The above guidelines, which involve participation by all the Commissions, can be



Prof. F. Pellerin, President of Analytical Chemistry Division.

divided as:

- nomenclature in analytical chemistry;
- assembly of data and constants;
- development of general methods of analytical chemistry;
- collaboration with other IUPAC Divisions and, additionally, with different international organizations on chemical activities.

For each of these sections an attempt will be made to demonstrate the IUPAC contribution and, simultaneously, possible developments.

Nomenclature in analytical chemistry

Although the authority of IUPAC in the field of chemical nomenclature remains undenied, past experience proved that the nomenclature of analytical chemistry did not attain the position deserved by the detailed work involved, partly because the IUPAC recommendations were scattered in various volumes of PAC. Publication of the highly successful *Compendium of Nomenclature in Analytical Chemistry* ('Orange Book') — translated into French and, possibly, into Spanish — filled this gap.

Work on nomenclature is being carried out at two levels: (1) preparation of a second edition of the Orange Book and (2) specific tasks by the Commissions.

Second edition of the 'Orange Book'

Coordination of the preparation of the second edition of the Orange Book, which takes into consideration work contributed by all Commissions, has become the responsibility of the Division Committee.

The Group has to move slowly towards the ultimate objective of having a compact and precise record of officially recognized definitions of acceptable terms and symbols. It is far from achieving this objective but significant progress has been made. The Group has developed a systematic outline for the proposed Table of Contents which stands as a generally accepted guide for the construction of the Manual. By circulating the outline mentioned above, in addition to discussions with various Division Members, particularly those in **Commission V.3**, nomenclature reports for vital fields not yet represented in the Compendium have been begun by various Commissions. Revision of several existing chapters has been undertaken. The Group will try to prepare what would simply be an expanded Compendium in which all of the additional nomenclature reports that have been published to date would be included and the index expanded to match. Completion of the second edition could thus be put realistically at three or four years hence.

Specific work on nomenclature by the Commissions

Work on nomenclature continues in each Commission according to its speciality: e.g. definition of amplification reactions (**V.1**), nomenclature selectivity in microchemical techniques and trace analysis (**V.2**), spectrochemical and other optical procedures for analysis (**V.4**) and electroanalytical chemistry (**V.5**). Reports discussed in Leuven are either published in PAC or circulated around the Division or IDCNS. New developments are noted in 'Current Programmes'. The major role and constant activity of **Commission V.3** are worthy of mention.

Multilingual Dictionary of Analytical Chemistry

In 1979, the Division Committee proposed the project of a *Multilingual Dictionary of Analytical Chemistry*. Initiation of this project was subject to some delays and it has now run into serious dif-

ficulties. In view of the publication of various types of dictionaries, it now seems doubtful to the project leader that work can be resumed. Such a publication is, in my opinion and in that of the other Division Committee members, essential. Other publications relate to other fields of analytical chemistry: applied chemistry and industrial technology. It should be emphasized that analytical chemistry is a field in which vocabulary must be precise and terms must be accurate.

I encouraged the project leader to review his position in the near future and a solution will be found to enable work on the project to be resumed. If the project coordinator cannot resume work, I shall request the permission of the Division Executive Committee to nominate a new coordinator for completion of the project within a reasonable time and for rapid presentation of a rough outline for publication.

I should like to add that offers of help on this publication have been received from analysts, attached to Divisions either as Members or as National Representatives, who are not Members of the Analytical Chemistry Division. The idea of a *Multilingual Dictionary of Analytical Chemistry* has, moreover, outgrown the IUPAC framework. On learning of its existence, many analysts wished to benefit from the project. It is undeniable that only an international organization such as IUPAC possesses sufficient authority to publish and make such a publication acceptable. The Division project also complements existing studies on nomenclature and the Orange Book.

Assembly of data

Equilibrium data

Publication of reports provides proof of the intense activity of **Commission V.6**. Recent developments, such as, 'computer retrieval systems' for the retrieval of stability constant data, critical evaluation of equilibrium constants of various solvents and metal chelates receive most of its attention. A Commission meeting will be held in September to review the programmes scheduled in Leuven.

Solubility data

Commission V.8 has been extremely active since its creation in Davos in 1979. Many specialized topics have already been presented for publication by Pergamon Press. A meeting was to be held in North Carolina but we have not yet received the minutes. An Appendix providing an update on work in process will be presented at the Prague meeting; participation by individual specialists is made possible by the large number of Members and National Representatives of **Commission V.8**.

Development of general methods of analytical chemistry

Specific Commission activity

Commissions have been obliged to reorganize their activities under the present circumstances to improve on efficiency. It is too early to form any appraisal of such activities; when all reports have been received a precise idea will emerge. The degree of activity will then be determined and a summary of steps to be

taken until the next General Assembly established.

It is to be noted that **Commission V.1** has placed the Leuven projects on the agenda of its Freiburg (Germany) meeting. **Commission V.2** reports on the determination of chromium, nickel, cobalt and molybdenum will be ready for its September meeting. The Commission has planned to extend its activities to the analysis of organic trace materials to provide a basis needed for analytical chemical studies (toxicological, metabolic, etc). Collaboration could be applied in this field, which is worthy of study, in conjunction with the other Commissions at Lyngby. Commission V.2 is concentrating on the role of the Analytical Chemistry Division and its relations with other organizations. An examination of 'Current Programmes' shows that **Commission V.5** has reorganized its activities. Its publications programme is regularly followed (texts circulated around the Division or IDCNS). The efficacy of the large number of projects undertaken will be improved by the new structure. The same applies for **Commission V.4** whose publications and role remain undisputed by analysts.

Commission V.7: 'Analytical radiochemistry and nuclear materials'

Commission V.7 no longer operates, as a result of a decision taken at Leuven; there will, therefore, be no meeting at Lyngby. A few of the Titular Members will meet in 1982 to complete various reports for publication.

A decision was taken by the Bureau at Leuven to establish a Working Group to study the problem of analytical radiochemistry and to propose a solution: either simply to dissolve the Commission or to define a new structure and programme.

A first meeting of this Working Group, led by a Division Committee member, was held in April 1982.

The most important general areas of interest seem to be:

Nuclear and radiochemical techniques as reference methods.

Nuclear techniques for characterization of solid state materials.

Training, safety and handling problems associated with the use of nuclear radiation and radionuclides.

Application of radionuclides and stable isotopes in fields such as clinical and environmental chemistry, biology, geology, nuclear medicine and material sciences.

Nomenclature, units and symbols in radiochemistry and nuclear techniques.

Analytical chemistry of natural and synthetic radioactive elements.

Generation, compilation and evaluation of relevant nuclear data.

The fields of radiochemistry and nuclear techniques should be represented with IUPAC for the following reasons:

These areas are not adequately covered by specialized national and international organizations.

There is a strong need for further international efforts regarding standardization of methods and safeguards.

The areas of interest defined above are of inter-

disciplinary nature and of high technical and scientific actuality.

IUPAC provides the opportunity to explore, evaluate and promote new promising areas in a more efficient manner than most international organizations.

Concerning the organizational form of representation of radiochemistry and nuclear techniques within IUPAC, it was unanimously agreed that a Commission within a single Division of IUPAC would not be appropriate because of the interdisciplinary nature of the fields. It was, therefore, proposed not to re-establish **Commission V.7** but to establish an interdivisional body for radiochemistry and nuclear techniques. This would be in the form of a Commission or Committee which draws its members from the various Divisions of IUPAC. The members of this interdivisional body could either be regular members of various Commissions or could serve as regular members in their respective Commissions with the Interdivisional Committee as a kind of coordinating body.

The Working Group on Radiochemistry therefore recommends to the Division President and the respective Division bodies to establish an ad-hoc study group for setting up an Interdivisional Committee on Radiochemistry and Nuclear Techniques by the time of the Copenhagen General Assembly. The task of this study group, which should consist of experts on radiochemistry and nuclear techniques drawn from the various IUPAC Divisions, would be to set up terms of reference, provide projects in the areas defined and to start work.

It would then be up to the relevant IUPAC bodies to decide definitely on the formation of an Interdivisional Committee on Radiochemistry and Nuclear Techniques on the basis of the specific proposal offered by an interdivisional ad-hoc study group.

The tasks of the Working Group do not, in fact, include the constitution of an ad-hoc committee. The second meeting, to be held in January, will be dedicated to the concrete proposal of priorities for the new group and submitting names of capable and efficient elements for launching the new programme when the final decision has been taken by the Bureau and Executive Committee of IUPAC.

General activities

The interest of the Division in various fields of analytical chemistry and in various analytical techniques justifies the development of intercommission programmes. The project on *Trace Elements of Metal in Natural Water* run by the Division Committee corresponds to this objective.

This work is being carried out in three stages: (1) inventory of techniques at Commission level specifying performances, precision, sensitivity and method limits, development potential, type of applications; in other words, the aim of this inventory is to guide the user to a relevant choice; (2) data assembly and presentation; and (3) publication of results.

It was apparent from the outset that this project would become of major importance. Some first-stage data has been collected; several Commission reports have been, or will be (after the 1982 Committee

Meeting), sent to the coordinator. The Division will then have reports which will be circulated before final discussions are held at Lyngby. It would seem, after a meeting with the coordinator in May 1982, that, to achieve rapid results, the workload should be conducted by publication of a general study plan to inform analysts of potential work by the Division in the field of trace elements in water; publication of separate articles relating to Commission work stemming from effective action by the Division; and collection of all data into a single booklet.

This sequence can be compared to that used for the Orange Book, the advantage being that no delays occur in publication of work and potential users of IUPAC recommendations are not disappointed.

The interest of an update on current problems is underlined yet again by such a study. Choice of procedures stems from professional habits within a laboratory or advice from the apparatus manufacturer. The role of the Division project is to provide a clearer picture, based on an objective well-informed choice, of available methods. This point can be illustrated by the case of the environment service analysis (cf. minutes of the SCOPE Assembly in Ottawa, June 1982 by Dr. Egan); the project on *Trace Elements in Water* is a current topic worked upon by this organization which requires analysts not only for dosing but also for providing guidance in the choice of methods used. General participation is required from the analyst to solve the problems of geologists, hydrologists, toxicologists, etc. Other examples can be found. The Analytical Chemistry Division possesses high analyst and data potential due to the diversity of means at its disposal; it can in many cases provide an immediate solution.

Participation and liaison with international organizations

The Division's collaboration with different international organizations is in line with the expertise at its disposal.

The Division is constantly in contact with ISO; twenty or so ISO documents have been studied and commented upon by the Division since the last General Assembly.

Participation by IUPAC is required in standardizing rules, techniques and methods of analytical chemistry, general techniques and definition of reference matter. A highly successful symposium was organized by IUPAC with the participation of the Analytical, Applied and Clinical Chemistry Divisions and which preceded the General Assembly at Leuven. Another meeting has been planned for 1984; choice of new methodology, definition and criteria of

purity of standards and alignment of modern techniques of trace detection are subjects included in the activities of the Division's Commissions.

IUPAC representation at the recent Board Meeting of SCOPE in Ottawa laid emphasis on their activity potential. Active participation from members of several Commissions (V.2, V.3, V.5) and the Division Committee itself in the International Workshop of Environmental Specimen Banking and Monitoring as relating to Banking, organized in Saarbruch in May 1982, resulted in substantial progress being made in the evaluation and conduct of studies on chemical components in the environment. The minutes, which are shortly to be published, will be useful to specialists in protection of the environment.

The Analytical Chemistry Division is aware that its work is rendered difficult by the multiplicity of its tasks; it is nevertheless pursuing and completing the traditional tasks of IUPAC. Analytical chemistry essentially involves participation in miscellaneous fields which do not necessarily involve chemistry or physics. A perfect mastery of 'The art of the science of analysis' (P. Elving) is a necessary key to the role of the analyst. Efficiency of the Division's work is not only dependent on high quality and specialization but also on an 'awareness campaign' on the position and services offered by the Analytical Chemistry Division of IUPAC in the field. Publications and also reasonable advertizing of its work will help to achieve these aims. The Division and its Commissions must not live in a closed circuit with publication of internal reports. Due to a limited circulation of its publications, it seems that much of the Division's work goes unnoticed.

The work should, in particular, be more accessible to analysts. The work published in PAC does not, due to the general nature of the journal, reach all analysts; publications in specialized international periodicals would be of great assistance. We run the risk of seeing the formation of more or less specialized groups unless we produce such advertizing. This suggestion should be examined so as to create awareness of the Divisions work and to maintain the authority and quality of the IUPAC expertise. It can be concluded that the Analytical Chemistry Division Committee and its Commissions carry out their specific activities; intercommission projects being aimed at assembling physicochemical data for direct use by analysts. Moreover, links are thereby created between the various sectors of analytical chemistry and an efficient service provided for those requiring the assistance of analysis within the chemical disciplines.

F. Pellerin

VI. APPLIED CHEMISTRY DIVISION

- VI.1. Commission on Food Chemistry.
- VI.2. Commission on Biotechnology.
- VI.3. Commission Oils, Fats, and Derivatives.
- VI.4. Commission on Atmospheric Environment.
- VI.5. Commission on Pesticide Chemistry.

VI.6. Commission on Water Quality.

VI.7. Commission on Reclamation of Solid Wastes (Suspended 1981).

In this report, individual projects of Commissions will not be discussed. The evaluation of projects was made in May and June and comments from Chairmen, Corresponding Members, and the Division President were forwarded to the Vice-President,

Dr. Schneider.

Critical comments were received from Commissions about the system of *yearly* evaluations of projects. The argument was brought forward that hardly had a project been initiated (or reported on, e.g. in Leuven), when the next 'evaluation' becomes due (e.g. this spring). It is my impression, too, that evaluation of projects (apart from initiation of projects) should be made on a biannual basis. This would reduce paper work considerably and, what is more, Commissions would be given an opportunity of getting enough work done to be worth being reported and evaluated.

Commission activities

The following reports are based on written statements received from Commission Chairmen (except VI.2).

Commission VI.1 met at Leuven with all eight titular members attending. In addition, six associate members, three national representatives, nine invited observers and seven members coopted to the working groups, were present.

There were some changes in the membership: Dr. A. D. Campbell, Dr. J. W. Howard, Prof. D. Reymond and Dr. A. E. Wasserman have resigned their functions in the Commission. New Associate Members were elected and approved: Dr. M. Castegnaro, Dr. D. L. Park, Dr. A. E. Pohland and Dr. F. Reiners. The Commission elected Dr. P. L. Schuller as new Vice-Chairman and proposed Dr. A. D. Campbell for nomination as National Representative; however, the Commission received with deep regret the sad news that Dr. Campbell died suddenly on 21 February 1982 while on business in Saudi Arabia. Prof. Dr. K. Vas, the National Representative of Hungary, died in the autumn of 1981.



Dr. H. Frehse, President of Applied Chemistry Division.

Seven projects were terminated at the Leuven meeting, either successfully after publication of the results or because it was not found relevant to investigate these topics any longer for various reasons. Many of the remaining projects are organized in two Working Groups.

Since the meeting in Leuven, the Working Group on Mycotoxins with its new Chairman, Dr. A. E. Pohland, distributed the third issue of the Working Group Newsletter. The project on *Physicochemical Data for Some Selected Mycotoxins* could be finished successfully and will be published in PAC, Vol. 54, No. 11, pp. 2219–2284. There were some difficulties because of the large volume of the paper (65 pages in print) and the many graphs. However, these have been settled. A collaborative study on patulin using HPLC procedure was completed, but failed because of the instability of the spiked samples. Continuation of this work is to be discussed in Vienna. All other projects of this Working Group are progressing according to schedule. Based on a proposal made at Leuven a new project on the chemical determination of trichotecenes (fusarium toxins) was started with Prof. Ueno as coordinator and with the approval of the Division.

Together with the Working Group on Aquatic Biotoxins, the Working Group on Mycotoxins is responsible for the organization and the scientific programme of the 5th International IUPAC Symposium on Mycotoxins and Phycotoxins in Vienna, Austria, 1–3 September 1982. With the cooperation of our National Representative in Austria, Dr. P. Czedik-Eysenberg, the final programme has been distributed. By May 1982 four hundred participants had already applied for registration.

The establishment of a Committee for the Coordination of International Mycotoxin Activities is at the planning stage.

The Working Group on Mycotoxins has at present 20 coopted members actively cooperating especially in collaborative studies.

The Working Group on Aquatic Biotoxins, under the chairmanship of Prof. Krogh and with the cooperation of nine coopted members, works predominantly on a method for the chemical determination of paralytical shellfish poisons, which later on should be studied collaboratively. However, at present only biological testing, using mice as test animals, gives conclusive results; despite the considerable effort in developing a chemical analytical method there has been only slow progress and there is still room for improvement.

A series of projects dealing with inorganic and organic contaminants is the responsibility of several project coordinators. Improved methods for the determination of fluorine, mercury and selenium in food will be developed and tested in the near future. The work on the determination of tin (with Dr. L. Coles as coordinator) has been completed and published in PAC, Vol. 54, No. 9, pp. 1737–1742.

A collaborative study on a method to determine *N*-heterocyclic compounds in food has been completed and a publication is on the way. The project will be followed by a new project on polyaromatic compounds, which has been approved by the Division President. The project in the nitrosamine area

will concentrate on the determination of total nitrosamines in food.

The project on residues in edible products from treated livestock is mainly concentrated on residues of sulfonamides in muscle and liver and methods of analysis for the determination of these compounds. In collaboration with the Commission on Biotechnology, guidelines for testing of single cell protein destined as a component for human food is in preparation.

The next meeting of the Commission on Food Chemistry will be held in Vienna, Austria, from 30 August to 1 September 1982, with Dr. P. Czedik-Eysenberg responsible for domestic matters.

A report from **Commission VI.2** was not available.

Current projects are on *Guidelines for Testing Protein Destined as a Component for Human Food*; preparations for the 7th International Biotechnology Symposium to be held in New Delhi, February 1984. Projects being deleted are: proposed guidelines for methodologies: measurement of cellulase activity (practically terminated); cellulose to ethanol (discontinued); ethanol as a fuel and energetic balances (practically terminated); biological aspects of water quality (terminated).

A new project has been proposed — *Guidelines for Testing Quality and Safety of Live Microbial Products for Agricultural Use*. As this sounded interesting, it was strongly recommended that a close liaison and consultation with the Pesticides Commission be established on this topic.

The Commission has submitted for publication a *List of Symbols with Units Recommended for Use in Biotechnology*.

Representatives of 32 countries are currently members of **Commission VI.3**. During the past year 14 Working Groups of experts were involved in development and validation of methods required for regulation of international trade or for product control. Eight methods were adopted at the IUPAC General Assembly in Leuven; these methods included determination of solid content of fats by NMR, determination of erucic acid, determination of linoleic acid, and detection of mineral oils residues, as well as four methods for analysis of commercial glycerines. In addition, recently adopted methods for tocopherols in fats and oils and polar compounds in frying fats were published in PAC, Vol. 54, No. 1, pp. 233–245.

The current programme of the Commission includes development and approval of methods for commercial glycerines and soaps, industrial lecithin products, oxidized fats, polycyclic aromatic hydrocarbons, emulsifiers, solvent residues in oilseed cakes, total sterols in oils, and triglyceride composition of fats and oils.

The Commission also plans to consider projects concerned with specific industrial problems (evaluation of stability, flavor evaluation hydrogenation control, water content in margarine, disposal of plant wastes, etc.), discuss the feasibility of developing rapid methods of analysis for use in factory control laboratories, consider the need to develop a comprehensive group of methods for quality or composition of oilseed meals, and to review the Commission's relationship to, and cooperation with,

other organizations.

The major activity of **Commission VI.5** since the Leuven General Assembly has been preparation for the 5th International Congress of Pesticide Chemistry, 29 August–4 September 1982, at Kyoto, Japan. Over 750 abstracts have been submitted for the Congress. Three reports (1) *Recommended Approaches to the Production and Interpretation of Pesticide Residue Data* (project 4/81), (2) *Environmental Chemistry of Organotin Pesticides* (9/81), and (3) *A Definition of Non-Extractable Residues in Plants and Soils* (7/81) have been finalized and approved for publication. FAO has purchased 200 reprints of project 4/81 as educational material for their international programme on pesticide chemistry in developing nations. A draft of project 7/81 served as the basis for discussion of the 1st FAO/IAEA Research Coordination Meeting on Isotopic Tracer-Aided Studies of Bound Pesticide Residues in Soils, Plants, and Food, Costa Rica, 30 November 1981. At the scheduled meeting at Hakone, Japan, 22–28 August 1982, prior to the Congress, the Commission will finalize projects on *Improved Cost-Effective Approaches to Residue Analysis* (11/81) and six other reports in various stages of completion.

'Suspended' Commissions

In accordance with the decisions made in Leuven, three Working Groups were set up which are investigating if there is need for IUPAC to be engaged in matters of Atmospheric Environment, Water Quality and Solid Wastes. If it is agreed proposals are expected to be made, by these Working Groups, for concrete areas or topics on which the respective Commissions should work.

The Working Groups are

Atmospheric environment

Prof. J. Calvert	National Center for Atmospheric Research, Boulder, Colorado, USA (Division Committee)
Dr. Egan	(Division Committee)
Mr. Luxon	(Division Committee)
Dr. Kearney	(Chairman, Commission VI.4)
Mr. Lechnitz	

Water quality

Prof. Dr. Malz	Emschergenossenschaft, Essen, FRG (Division Committee)
Dr. Coles	(Chairman, Commission VI.6)
Mr. Schjodtz-Hansen	

Solid wastes

Dr. P. Brunner	Eidgen. Anst. für Wasserversorgung, etc., Abt. Feste Abfallstoffe, Dubendorf, Switzerland (Division Committee)
Prof. Naudet	(Secretary of former Commission VI.7)
Mr. Lindfors	

The Working Groups will report to the Division Committee at its meeting in London, October 1982. It seems appropriate not to report any developments concerning these Commissions to the Bureau before this meeting.

H. Frehse

VII. CLINICAL CHEMISTRY DIVISION

- VII.1. Commission on Automation and Clinical Chemical Techniques.
- VII.2. Commission on Quantities and Units.
- VII.3. Commission on Teaching.
- VII.4. Commission on Toxicology.

This Annual Report summarizes the activities of the IUPAC Clinical Chemistry Division (CCD) since the 31st General Assembly, which was held in Leuven, Belgium, in August 1981. It supplements, but does not duplicate, the Roster of Ongoing Projects that was compiled in May 1982.

Organizational matters

The officers of the Clinical Chemistry Division (N. Montalbetti, Secretary; S. S. Brown, Vice-President; F. W. Sunderman Jr., President) have revamped the functioning of the Division, (a) preparing *Guidelines on the Presentation of Division Documents*, (b) stipulating prior circulation of curricula vitae and statements of willingness to serve for candidates for election to the Division Committee and its Commissions, (c) designing a *Check-List for Circulation of IUPAC-Clinical Chemistry Division Documents*, (d) initiating a *Clinical Chemistry Division Newsletter* to enhance communications within the Division, (e) formulating a *Flow-Chart for Publications Procedures in the Clinical Chemistry Division*, (f) assigning to the Vice-President responsibility for critical assessment of Division projects, (g) assigning to the Secretary responsibility for coordinating relationships between IUPAC-CCD and the International Federation for Clinical Chemistry (IFCC), and (h) compiling a comprehensive tabulation of Commission Reports and other publications of CCD. The documents that are mentioned above are available from the Division Secretary (N. Montalbetti). These organizational efforts should result in a more efficient, better informed, and more responsive Division.

International conferences

The IUPAC-CCD has participated in or helped to organize the following international conferences during the past year.

International Conference on Automation in the Clinical Chemistry Laboratory; Barcelona, Spain, 19-22 April 1982; M. Hjelm, IUPAC Representative.

Second International Conference on Biomedical Laboratory Standardization; Atlanta, USA, 9-11 June 1982; H. P. Lehmann, IUPAC Representative.

Scientific Meeting of the IUPAC Subcommittee on Environmental and Occupational Toxicology of Nickel; Dublin, Ireland, 10-11 June 1982; F. W. Sunderman Jr., Chairman.

International Workshop on the Role of Biological Monitoring in the Prevention of Aluminum Toxicity in Man; Luxembourg, 5-7 July 1982; J. Savory, IUPAC Representative.

International Workshop on Biological Indicators of Cadmium Exposure; Luxembourg, 7-9 July 1982; M. Stoepler, IUPAC Representative.



Prof. F. W. Sunderman, Jr., President of Clinical Chemistry Division.

Commission activities

Commission VII.1 continued to work on *Nomenclature for Automated Analysis in Clinical Chemistry*, and initiated work on *Electronic Data Processing and Microprocessors in Clinical Chemistry*.

Commission VII.2 completed a document on *Molecular and Atomic Emission and Absorption Spectroscopy in Physico-Chemical Plasmas*. Five other documents are in various stages of preparation.

Commission VII.3 continued formulating teaching programmes for clinical chemistry in developing countries, and compiling certification, licensure, and accreditation criteria for clinical chemistry in developed countries.

Commission VII.4 and its subcommittees organized joint meetings with the Commission of the European Communities on aluminium and cadmium toxicities, planned the Second International Conference on Clinical Chemistry and Chemical Toxicology of Metals to be held in Montreal in July 1983, conducted interlaboratory surveys of blood cadmium and selenium analyses, drafted guidelines for collection, storage, and shipment of biological samples for nickel analysis, and initiated a new project on quality control and reference materials for toxicology and occupational hygiene laboratories.

Other activities

In response to a request to the President of IUPAC from the World Health Organization (WHO), the Division established a panel of scientists to assist in joint work programmes in nine spheres of activity that range from clinical chemistry tests in peripheral health laboratories to methodological aspects of the WHO International Programme on Chemical Safety.

These WHO-IUPAC joint activities are being supervised by Dr. J. Bierens de Haan, in close coordination with the IFCC.

The Division is cooperating with the International Agency for Research on Cancer (IARC) in planning an international conference on the biological effects of nickel and in drafting sections of a monograph on analysis of inorganic carcinogens. The Division maintains close liaisons with the International Union of Biochemistry (IUB) and the International Union on Pharmacology (IUPHAR), and is favourably

disposed to establishing a similar liaison with the new International Union of Toxicology (IUTOX). The Division is collaborating with the IUPAC Applied Chemistry and Analytical Chemistry Divisions in sustaining interdivisional efforts on harmonization of collaborative analytical studies, including plans for an International Symposium to be held in Washington, DC, USA during October 1984.

F. William Sunderman Jr.

Chinese Chemical Society Golden Jubilee

The 50th Anniversary of the founding of the Chinese Chemical Society was celebrated in its birthplace — Nanjing, China — with a symposium attended by chemical leaders from Asia, America and Europe, on 20–23 September 1982. The great event was also celebrated with a convention at Taipei on 11–14 December.

On both occasions the main congratulations were delivered by the President of IUPAC, Prof. S. Nagakura. He stressed that the Union continues to promote cooperation among chemists all over the world and to contribute to the advancement of pure and applied chemistry in all its aspects, without regard to race, religion or political philosophy.

Chemists, with other scientists and engineers, have jointly built the modern civilization of the 20th century and have a major role to play in the future advancement of our human society.

From this point of view, said Prof. Nagakura, IUPAC took an important step in 1975 when it initiated the major new activity theme of CHEMRAWN: Chemical Research Applied to World Needs. CHEMRAWN I (Toronto, 1978) — World Conference on Future Sources of Organic Raw Materials — was judged to have been a tremendous success. CHEMRAWN II (Manila, 6–10 December 1982) was even more ambitious: International Conference on Chemistry and World Food Supplies — The New Frontiers. (Reported by Dr. H. Egan below.)

CHEMRAWN II

IUPAC sponsors some 25–30 different conferences and symposia on a wide range of chemical subjects throughout the world each year. Few of these are held in developing countries and few are on the scale of CHEMRAWN II. Even fewer involve world leaders not only in chemistry and from industry but representative of governments and of international agencies. With over 600 participants representing 45 countries from locations from Basel to Beijing, Colombo to Caracas and Quebec to Quezon City, CHEMRAWN II set out to provide an independent, non-political central forum for the discussion of critical needs and practical solutions relating to chemistry, agriculture and food supplies. Its objectives were to put into perspective those areas of research and development having the potential to increase significantly food production and to improve processing and storage, to strengthen scientific research in developing nations and to accelerate the implementation of research priorities and objectives by fostering cooperation between governments, industry and universities. It brought together the most modern aspects of chemistry, biochemistry and microbiology relating to these areas, at the same time taking into account technical, social, economic and environmental aspects.

The structure of the meeting had been carefully planned by an Organizing Committee under CHEMRAWN Committee Chairman Dr. Bryant W. Rossiter. The opening and high-level reviews of the state of the art on the first day were followed in the second by six separate simultaneous sessions on the role of chemistry in improving agricultural productivity, concerned, respectively, with crop nutrition management, pest control, animal production, new and improved sources, processing and storage, and quality control. The six Chairmen together with the Chairman for the third and fourth days concerned with 'the forward edge', the present frontiers of science and technology, themselves met together regularly from the first day as a Forward Action Committee, under the Chairmanship of Dr. Cyril Ponnamperna, progressively developing and refining conclusions and recommendations and thus enabling the fifth and final day to be devoted to these. Three Nobel Laureates, Dr. Norman Borlaug, Dr. Melvin Calvin and Sir George Porter, together with the Executive Director of the UN World Food Programme, James C. Ingram, were among the distinguished speakers who presented papers, which were supported by a wide range of posters (many from developing countries) and an exhibition of scientific equipment.

Participants were welcomed by IUPAC President

庆祝中国化学会成立五十周年学术报告会



Prof. Lu Jiaxi, President of CCS, opens the Symposium in Nanjing. Seated beside him (on right) is IUPAC President Nagakura.



Prof. Nagakura addresses the Convention in Taipei.



His Excellency Ferdinand Marcos (President of the Philippines) presents the Golden Heart Award to Dr. Nyle Brady (US Agency for International Development) with Mrs. Brady looking on.



Dr. David Hopper (World Bank), Mr. James Ingram (Food and Agriculture Organization of the United Nations), and Dr. Bryant Rossiter (Chairman of CHEMRAWN Committee of IUPAC and of CHEMRAWN II Organizing Committee) in Manila.

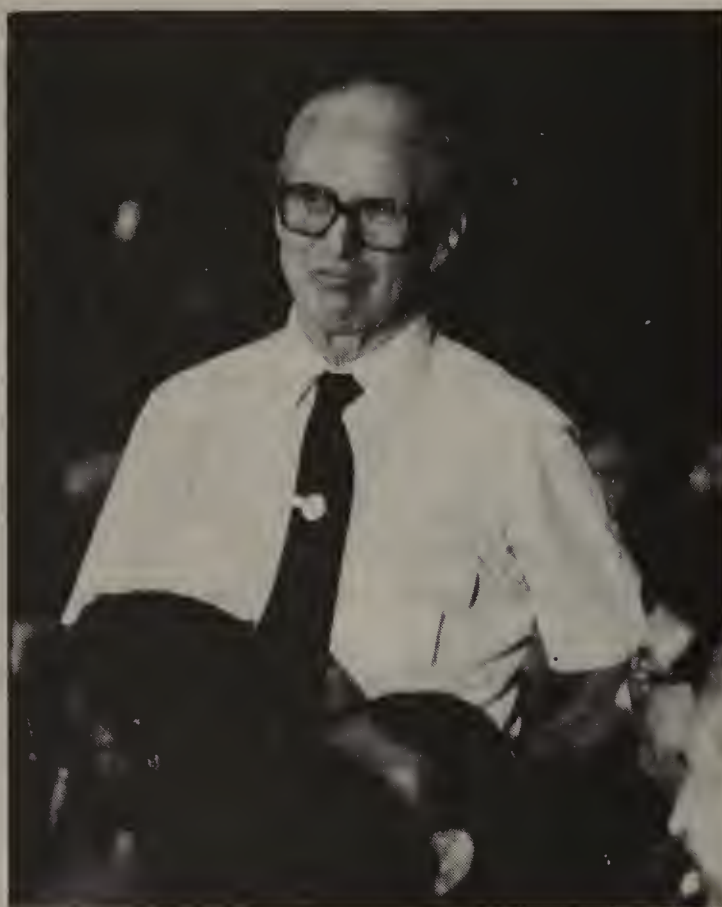
Prof. S. Nagakura and the Conference was opened by the President of the Republic of the Philippines, Ferdinand E. Marcos. The meeting was co-sponsored by the International Rice Research Institute which is located at Los Banos, 60 km to the south of Manila: an opportunity to visit the Institute, which had recently received the 1982 Third World Prize for outstanding contributions to Third World development, was provided on the afternoon of the fourth day.

Mr. Ingram quoted the English poet John Dryden who wrote, 300 years ago:

“A man so various that he seemed to be
Not one, but all mankind's epitome
... chemist, fiddler, statesman and buffoon”.

This helpful if unflattering warning reinforced the serious tone of the discussions, both by the Conference participants and its Future Actions Committee. Among the conclusions reached were the need to give priority to land utilization and soil erosion control, the provision of economically realistic fertilizers and the direct dispersal of technologies with due regard to local conditions, from urban to rural situations. More information is needed on the physiology and biochemistry of plant-pest interactions with enhancement of integrated pest control programmes and special attention to naturally occurring substances with pesticidal properties. Research on the maximization of photosynthetically produced biomass for use in the most efficient manner, whether as food, fodder, fibre or fuel, is given high priority, together with the development of integrated animal disease programmes based on resistance, chemotherapeutic prophylactic and reproduction control measures suitable for both large- and small-scale operations. The Conference recognized that concern is often expressed regarding the risk associated with chemicals but saw the need to pursue the improvement of cost-benefit relationships of these in agriculture and food supplies, in the widest sense: chemistry must be one of the principal contributions to maintaining world food supplies, and the concept that all chemicals *per se* are dangerous should be dispelled, unreasonable fears on this account are to the disadvantage of both developed and developing countries. Research on food processing should include programmes on waste and by-product utilization, the enhancement of protein sources through technological manipulation and genetic engineering improvement in bulk storage and low-cost packaging materials, and international collaboration aimed at the validation of analytical techniques for quality control and the maintenance of standards.

The fundamentals of plant processes need to be more clearly understood. A fuller knowledge of plant physiology and genetic engineering, if successfully developed, offers the prospect of a second revolution in agriculture, rivalling that of the initial green revolution, and chemistry has a full part to play. Full cooperation is needed between government and



Nobel Laureate Dr. Norman Borlaug.

private funding agencies, research managers and agricultural scientists in both developed and developing countries in many fields, including photosynthesis, tissue and cell culture, recombinant DNA, nitrogen fixation, plant growth regulation and the development of molecules with extremely high and selective biological activity, to reduce both cost of application and potential adverse environmental effects. The conclusions and recommendations of the Conference will be published shortly and distributed to all participants. The proceedings, under the editorship of Dr. L. W. Shemilt, will be published by Pergamon Press.

All conferences have their problems and such could be identified in Manila. However, Filipino enthusiasm and hospitality were evident throughout and the facilities provided by the Philippine International Convention Centre were excellent. Some 20% of the participants responded to an invitation to evaluate the meeting and shared a high level of appreciation of its overall purpose and objectives, the programme content and its value to the individual. Ultimate success can only be measured when the final report of the Future Activities Committee is published and its main recommendations are put into effect.

IUPAC PEOPLE

In this column, as its title suggests, we wish to present news about our past or present IUPAC colleagues. Good news — honours, awards, appointments — and sad news, the death of former coworkers. The success of the column must depend on the receipt of accurate news-worthy items and, once again, we ask for your assistance. Neither your part-time editor nor the other busy people at the Secretariat can hope to pick up anything but a random sample of items and often then only with the briefest of information. We ask therefore if you would send us news about yourselves or your colleagues that seems to be suitable for this column.

Congratulations to:

Prof. C. J. H. Schutte (Commission I.5) on his appointment as President of the South African Chemical Institute.

Dr. J. H. O'Donnell (Australian National Representative, Division IV Committee) on the award of the Battaerd-Jordan Australian Polymer Medal.

Dr. Mary L. Good (President, Division II) on her designation as 1982 *IR&D* Scientist of the Year.

Prof. P. Métais (Commission VII.2) on the award of the Distinguished Clinical Chemist Award at the IFCC Congress in Vienna, August 1981.

Prof. M. Delhaye (Commission I.5, Subcommittee on Infrared and Raman Spectroscopy) on the award of the Lippincott Medal donated by the Society for Applied Spectroscopy, the Coblentz Society and the Optical Society of America.

IUPAC Chief at CSIR

The President, Prof. S. Nagakura, recently visited CSIR, Pretoria, South Africa. He congratulated the South African contributors to the 13th International Symposium on the Chemistry of Natural Products, Pretoria, August 1982 (plenary lectures in *Pure & Appl. Chem.*, Vol. 54, No. 12, 1982), and also mentioned the high standard of South African work in some branches of geochemistry. He hoped that the South African National Committee for IUPAC and the main body of the Union would deepen their mutual understanding and that individual chemists and chemical engineers would cooperate in IUPAC projects.



Prof. S. Nagakura and Dr. C. F. Garbers, South African CSIR President.

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

It is current IUPAC practice to publish summaries of the minutes of meetings of Committees, Commissions, etc., so that readers are presented with only the important information, conclusions and actions that other members of IUPAC need to know about.

Summary minutes of the meetings held at the 31st General Assembly, Leuven, Belgium, were published in *Chemistry International* (CI), Supplement 1982. It is hoped that similar summary minutes of meetings during 1982 can be included in the first few regular issues of CI 1983.

As there is inevitably a delay between receipt of documents at the Secretariat and their publication, would Secretaries please send, to the Editor of CI, a copy of summary minutes as soon as possible after the meeting?

Those received in time for this issue are reproduced below. The Editor is grateful to those who provided documents at short notice.

Committee on Teaching of Chemistry: Montpellier, France, 1–2 September 1982

Please note that references to previous Committee Meetings are given by the prefix of the year; thus, meetings at Ljubljana, Cassis, Dublin, Ljubljana and Leuven are indicated by 77/, 78/, 79/, 80/ and 81/, respectively.

82/1 Composition of the Committee

An up-to-date list of members and National Representatives is given in the *International Newsletter on Chemical Education*, No. 17, August 1982.

82/2 Minutes of the previous meeting

Minutes of the previous meeting held in Leuven, Belgium on 29 and 30 August 1981 were approved.

82/3 Articles on the CTC in the *J. Chem. Ed.* (81/3)

The Chairman reported that a paper has been published in the *Journal of Chemical Education*, February 1982, explaining the role of the IUPAC–CTC. Reprints are available from the Chairman and from Prof. Newbold, the authors.

82/4 International Newsletter on Chemical Education (81/4)

1. The Chairman reported that:

- (a) Newsletter Nos 16 and 17 were published in December 1981 and August 1982.
- (b) A new contract was signed with UNESCO contributing \$2000 for issues 17 and 18. One thousand dollars per issue covers about half of the expenses. It was noted that 3000 copies are printed from which 1000 are sent to individuals in

developing countries which are not members of IUPAC.

- (c) Financial support was also given during the year by the American Chemical Society (\$1000), the German Chemical Society (\$1000) and the Chemical Society of Japan (\$500). The Chairman expressed the gratitude of CTC for these generous gifts without which the 3000 copies of the two issues could not have been printed.

- (d) Libraries are now charged for the Newsletter.

Some possibilities to meet the financial problem were discussed:

Should the number of issues, or the number of pages per issue be reduced?

Should we charge the readers who can pay for the Newsletter and use the money given by UNESCO to distribute copies to those who cannot pay?

Should the Newsletter remain as it is, provided additional funds are raised (e.g. from advertizing). Prof. Newbold offered to ask for money from the International Section of the National Fund for Scientific Research in Canada. Profs Addison and Rivail will also ask national organizations in the UK and France for financial assistance.

2. Prof. Paoloni reported that the Newsletter special issue devoted to Computers in Chemical Education (81/4 and 81/7) was now ready. Prof. Paoloni raised the point of copyright on the software and it was agreed to ask ICSU–CTS to consider this problem.

82/5 Chemical Education in the Seventies (81/5)
This book which contains 43 essays was published (600 copies) thanks to a grant of \$3000 from UNESCO. UNESCO was unable to fund a reprint and Pergamon Press agreed to produce a new edition of 500 copies and to sell them at a price of \$17.50 or £8.75 (half price for CTC members).

82/6 Bibliography of Chemical Education Journals (81/13)

The Chairman reported that this bibliography, prepared in collaboration with UNESCO and containing details on over 160 journals from over 60 countries, is now published. Copies were sent to National Representatives and others are available from the Chairman (price \$5 or £2).

82/7 New Trends in Chemistry Teaching — Volume V

The Chairman reported the publication of this book, edited by CTC, in English or French.

82/8 Teaching School Chemistry (77/5, 78/17, 79/12, 80/9, 81/8)

This book, produced in collaboration with UNESCO, has seven chapters written by experts in the field. UNESCO now has the manuscript and we are assured that publication will be during 1982.

82/9 Locally-produced and Low-cost Equipment (79/7, 80/8, 81/15)

The Chairman reported that the booklet on the use of the low-cost equipment produced in Madras has been completed and that the group under the heading of Dr. Sane has refined the existing equipment.

Two other workshops will be held in collaboration with UNESCO. Prof. Giesbrecht reported that the next workshop will be held in Sao Paulo by the end of July 1983 with about 30 participants (12 from Brazil, supported by national organizations, and 18 from other countries in Latin America). A workshop in southeast Asia is being planned by CTC and UNESCO.

82/10 Project for an integrated approach to the university teaching of chemistry (81/9)

Prof. Newbold agreed to replace Prof. Illuminati as Chairman of the Working Party. He reported on a survey concerning North America. Prof. Addison mentioned some unsuccessful experiments of integrated approach in the UK. Prof. Newbold agreed to clarify what is exactly meant by integration and to prepare for the 7th Conference in Montpellier a report on some examples of the integrated approach including the results of some work on evaluating courses.

82/11 Follow-up survey on the use of SI units (81/6)

Prof. Newbold reported on the use of SI units in the teaching of chemistry at school level for 46 countries and at university level for 31 countries. Two booklets present the

result of these surveys and can be obtained from Prof. Newbold.

82/12 Safety procedures in schools (81/23. App. II)
The Secretary presented the report from Mr. Hitchings, which examines various factors in safety procedures in schools. It was agreed to invite Mr. Hitchings to prepare a draft of a small booklet (not more than 6 pages) on safety for teachers. This could, in the first instance, be part of a Newsletter but it was hoped that funds could be found for publication in its own right. It was agreed that this booklet could be of considerable use to teachers where organizations such as science teachers associations were not already assisting them.

82/13 International Conferences on Chemical Education: 6th ICCE, Maryland, 9–14 August 1981 (79/14, 80/10, 81/3)

Prof. Gardner gave a report on the publication of the Proceedings and of the Source Book of the Maryland Conference. All the copies of the Source Book have been distributed and many requests could not be satisfied.

82/14 7th ICCE, Montpellier, 21–26 August 1983

The general theme is Chemistry, Education and Society. There will be 7 or 8 plenary lectures, including lectures on frontiers of chemistry, chemical education, chemistry and society, and lectures by two secondary school teachers. The distinctive feature of this Conference is the organization of about 25 workshops or seminars on specific topics concerning techniques and methods of teaching and on curricula of chemistry and society. Each workshop will last about 5 hours, each with about 20 participants. Each participant may attend two workshops. It is expected that many workshops will produce booklets or initiate international collaboration in the field, or both.

82/15 8th ICCE, 1985

Prof. Shimozawa proposed, on behalf of the Chemical Society of Japan, to hold the 8th Conference in Tokyo, 18–23 August 1985. The general theme is "The How and the Why of Teaching Chemistry — The widening scope of chemistry". The estimated number of participants is 330 of which 200 would be Japanese. The registration fee would be \$200.

The CTC welcomed this proposal, in principle, but raised some points concerning the title and content of the Conference, the registration fee, the geographical distribution of the participants and the possible overlap with the ICSU Conference, 1985.

In particular, the Committee wished the registration fee to be as low as possible (\$150 maximum), that great effort would be made to make the Conference as representative as possible of countries and level of teachers as in the last three Conferences and that the UNESCO National Commission is approached as soon as possible.

It was noted that the Conference Committee would have the Chairman of IUPAC-CTC (as Chairman), have other members of IUPAC-CTC and the Head of Division of Chemical Education of the Chemical Society of Japan. The Organizing Committee would be created in a similar way as at the Maryland Conference.

The Chairman agreed to write a letter to all members of the CTC to ask their opinion. Prof. Shimozawa agreed to prepare a detailed proposal for the CTC meeting in Denmark in August 1983.

82/16 Collaboration with UNESCO

Dr. Kingston reported on the IOCD, its foundation and its aims. The current program aims to identify the chemists working in developing countries and to help them by means of direct relationships. One hundred laboratories in 28 countries are on the list to receive help in the form of spectra, biological screening, maintenance and repair of equipment.

Prof. Kornhauser reported that IOCD was preparing a publication with a catalytic role to play, which will explain the aims and call for cooperation. Offers had already been made, including analytical services, grants for young researchers, gift of films, advising researchers and teachers.

82/17 International Council of Scientific Unions — ICSU Committee on Teaching of Science (81/18)

The Chairman reported on the Committee Meeting held in Paris, November 1981 and an officers' meeting held in Malvern, May 1982.

In particular he mentioned the work of the Committee on Technician Training and the workshops held in Bombay and Nairobi.

CTC has been invited to participate (and agreed that it should) in the 1985 ICSU Conference on Science and Technology Education for Human Needs in the 21st Century.

82/18 Committee on Science and Technology in Developing Countries — COSTED (81/19)

The Chairman reported on activities linked with COSTED. He had been invited to a meeting with COSTED at the ICSU General Assembly in Cambridge (UK) in September. COSTED was continuing to express interest in the IUPAC-CTC Low-Cost Equipment Project.

82/19 FECS Working Party on Chemical Education

Prof. Kornhauser reported that a meeting of the FECS/WPCE was held in Paris on 26 and 27 March 1982. The topics under discussion included the IOCD, the collaboration with the Working Party on Professional Affairs, the Chemical Olympiad held in Sweden and the 7th ICCE.

82/20 Other regional organizations (81/17)

All regional organizations continued to be invited to participate in our meetings as observers. The Chairman explained that he has written to UNESCO who had expressed concern that regional organizations should be invited, asking whether they could fund travel expenses. He had been told that they would make suggestions and the Chairman agreed to write again.

82/21 Other IUPAC Commissions (81/24)

The Chairman reported that during the meeting in Leuven, September 1981, collaborative work was started with three IUPAC bodies. He was in correspondence with the Commission of Photochemistry (Division of Organic Chemistry) and the Commission of Atomic Weights (Division of Inorganic Chemistry). Prof. Samuel has agreed to act as observer on the Commission of Teaching, Division of Clinical Chemistry. He reported that he had received minutes of their last meeting.

82/22 IUPAC Congress in Köln (FRG), June 1983

Dr. Hofacker reported on this Congress and stressed that Education in Chemistry was a main topic of the Congress as well as the subject of one of the plenary lectures.

82/23 Date of the next meeting

The IUPAC General Assembly in Copenhagen is scheduled from 18 to 26 August 1983. The meeting of the CTC will be on 18 and 19 August to allow members and National Representatives to reach Montpellier in time for the start of the 7th ICCE (21 August). There will be an informal meeting of the CTC during the 7th ICCE for the benefit of members and National Representatives who are unable to attend the General Assembly.

D. J. Waddington

IUB-IUPAC Joint Commission on Biochemical Nomenclature (JCBN):

Heidelberg, FRG, 3-5 June 1982

The meeting was held jointly with the Nomenclature Commission of IUB (NC-IUB).

1. Nomenclature and symbolism of amino acids and peptides

Further small changes were made to draft recommendations, and these were approved for final consultation with the IUB Committee of Editors of Biochemical Journals (CEBJ) and with the

Commission on Nomenclature of Organic Chemistry (CNOC). JCBN hoped that the recommendations might be approved and published within the year.

2. Glycoproteins

Preliminary draft recommendations were received and discussed. The expert panel agreed to redraft them in the light of the discussion.

3. Previously published recommendations

Progress was noted on the revision by experts of recommendations on phosphorus-containing compounds, lipids and glycolipids, steroids, and

tetrapyrroles. Revision of the recommendations on tetrapyrroles appeared to be almost complete and revision of recommendations on carbohydrate nomenclature should start soon.

4. Fields under consideration

Recommendations from experts were awaited on catecholamines, prostaglandins and thromboxanes, and folic acid.

5. Collaboration with NC-IUB

Much of the meeting was devoted to plans for revision of the list of enzymes *Enzyme Nomenclature*, especially the naming of enzymes and their substrates and products. Among topics discussed were haem-thiolate proteins, ATPases, nucleases, enzymes that transform residues in proteins, and enzymes that act on carbohydrates.

6. The dalton

It was agreed that a short statement should publicize the use of the dalton as approved by JCBN and NC-IUB, for example, the use of 'kDa' in place of the often seen 'K' in calibrating scales of molecular mass, and adjectival use as in 'a 44-kilodalton protein' or 'a 44-kDa protein'.

7. Newsletter

A draft of the 1983 Newsletter to inform the public about the work of JCBN and NC-IUB was approved.

8. Secretaryship

It was unanimously agreed to recommend IUPAC to appoint Dr. A. Cornish-Bowden a member of JCBN and to recommend IUB and IUPAC to appoint him Secretary of JCBN and NC-IUB.

H.B.F. Dixon

Macromolecular Division Committee:

Amherst, USA, 16 July 1982

1. The Committee approved the nominations of Profs A. Bantjes and G. Reinisch as National Representatives for The Netherlands and for the GDR, respectively.

2. The Committee reaffirmed its recommendation that large, multitopic macromolecular symposia should be held only every other year. The necessity for having formal guidelines concerning the frequency and topics of IUPAC-sponsored symposia was felt. A document with regard to these guidelines will be discussed at the next meeting of the Committee.

3. IUPAC sponsorship for the following symposia has been approved:

24th Prague Microsymposium on "Copolymers, Structure and Solution Properties", 11-14 July 1983.

25th Prague Microsymposium on "Processing and Long-Term Stabilities of Hydrocarbon Polymers", 18-21 July 1983.

6th International Symposium on "Cationic Polymerization", Ghent, Belgium, 30 August-2 September 1983.

29th International Symposium on Macromolecules, Bucharest, Romania, 5-9 September 1983.

26th Prague Microsymposium on "Medical Polymers", 9-12 July 1984.

International Symposium on "Polymerization of Small Heterocycles and Aldehydes", Krakow, Poland, summer or early autumn 1984.

Symposium on "Physical Chemistry of Colloids and Macromolecules" in commemoration of the 100th anniversary of the birth of The Svedberg, Stockholm-Uppsala, Sweden, 30 August-1 September 1984.

International Symposium on "Characterization and Analysis of Polymers", Melbourne, Australia, 11-14 February 1985.

International Symposium on "Non Crystalline Order in Polymers", Naples, Italy, May or June 1985.

30th International Symposium on Macromolecules, The Hague, The Netherlands, July or September 1985

4. The Committee put forward a proposal that, in view of the large number of Symposia and Conferences sponsored by the Division, only those lectures which deal with topics not treated during the past two or three years should be selected for publication in *Pure and Applied Chemistry*, eventually with short abstracts of other plenary and invited lectures. This proposal will be submitted to the IUPAC Committee on Publications.

5. A short report on the activities of the Division since the meeting of the Committee in Leuven, 1981, was given by the President of the Division. It was mentioned that recommendations for the nomenclature of single-stranded inorganic and coordination polymers, established by Commission IV.1 in collaboration with the corresponding Commission of the Inorganic Chemistry Division, have been published and that the documents on copolymer nomenclature and on polymer classifications are nearly completed. The Committee was informed about the activities of the Japanese Sub-group of Commission IV.2 which, *inter alia*, included the preparation of a paper on "Characterization of High Impact Polystyrene and Similar Materials".

6. The Committee decided to follow closely the activities of the CHEMRAWN Committee by delegating an observer to each of its meetings. For CHEMRAWN meetings in the USA Dr. Bikales will represent the Division, for meetings outside the USA the President of the Division will appoint, from the Division Membership, an appropriate observer.

7. The Committee decided that the important US Report on "Polymer Science and Engineering; Challenges, Needs and Opportunities" will be discussed during the Lyngby meeting of the Division Committee in 1983.

8. As a number of full members and coopted members will have to be elected in 1983, all Division Members and National Representatives were asked to propose names for candidates. These proposals must be submitted to the Secretary of the Division not later than 1 June 1983. It was stressed that it is important that several candidates from industry should be recommended.

M. Mandel

Commission IV.2 — Polymer Characterization and Properties

(a) Working Party on Supported Polymer Films: Liege, Belgium, 13 May 1982

The Working Party on Supported Films, Chairman Prof. L. Dulong, held an interim meeting at Liege on 13 May 1982, on the occasion of the XVIth FATIPEC Congress, with only one item on the agenda, the discussion of new projects.

A new project proposal entitled "Characterization of cure of coatings in relation to performance properties" was presented by Kooistra and discussed at some length. It was resolved to make this proposal a new project with the participation of Biethan, Christensen, Hansen, Kooistra (being asked to take over the leadership) and Sickfeld. Further participants are welcome. A more detailed proposal, to be worked out by Kooistra, will be published in different journals.

Two other proposals were also discussed, namely that of Oesterle entitled "Paint structure-formation and epistructure-transmission effect" and of Schmid entitled "Formation of cracks and checking in the late age of pigmented coatings during weathering". Resolutions concerning further activities with these proposals were postponed.

The next meeting of the Working Party will take place at Zurich in the second half of April 1983.

J. Sickfeld

(b) Working Party on Thermal Properties of Polymers: Amherst, USA, 15 July 1982

1. Report on the organization and objects of the IUPAC Macromolecular Division and especially of Commission IV.2 "Polymer Characterization and Properties".

With respect to the very first meeting of the WP members the Chairman reported about this topic.

2. Discussion of the proposed collaborative work of the WP.

A first collaborative work on the glass transition phenomena of polystyrene was resolved. Five different samples will be supplied by DOW Chem. and BASF AG. Due to the current collaborative investigations by other scientific organizations, like ICTA, NATAS, and ASTM, no further programme was proposed at the meeting.

3. The next WP meeting will be held in connection with the IUPAC Macromolecular Symposium in Bucharest (Romania) in September.

G. Hinrichsen

(c) Working Party on Kinetic Parameters for Free-radical Polymerization: Mainz, FRG, 24–25 June 1982

Membership

The active membership is small, making it difficult to maintain a full programme and more participants are welcome. A set of rules governing membership of the Working Party was adopted; membership is open to all who are willing to take an active part in the programme.

Review of progress

The original experimental programme called for the

determination of kinetic parameters for the bulk polymerizations of styrene and of methyl methacrylate to low conversions at 25, 60 and 90°C.

Progress achieved since the inception of the Working Party was discussed in detail; this was the first meeting since that time.

A data analysis procedure based on the error-in-variable method and the classic kinetic model for free-radical polymerization has been developed and tested. Two new types of dilatometer have been used; both designs were approved for future experiments. A stirred-tank reactor developed in one laboratory will also be used in future work.

Data from the first round of experiments were considered in detail. Problems associated with the operation of the experimental programme proposed initially were identified and discussed.

It was concluded that low concentrations of impurities, not removable from the monomers using any reasonable procedure, are probably responsible for many discrepancies between data obtained in different laboratories. While it may be possible, using very pure monomers, to obtain correct values of kinetic parameters, such data will not be useful to other laboratories as base-line data. As a pragmatic solution to these problems it was decided to place less emphasis on data obtained at very low conversions.

All laboratories reported difficulties in determining molecular weights using the proposed procedures based on gel permeation chromatography. Problems were caused by a lack of standards, especially for poly(methyl methacrylate), the limits of resolution of the columns available, correct estimation of baselines and assessment of the low molecular weight ends of the chromatograms.

Future programme

It emerged from the review that the original programme was unrealistic. A modified programme which has a high probability of yielding useful results in reasonable time was devised.

Because of certain practical difficulties and the inadequate number of laboratories which had opted to work at 25°C, and because of experimental problems at 90°C, future studies will involve only thermal initiation at 50, 60 and 70°C.

Reaction conditions which can be used to derive kinetic parameters in accordance with the classical kinetic model are extremely restricted. For example, rates of polymerization must be sufficiently high that polymer molecular weights are analysable by gel permeation chromatography ($\bar{M}_n < 5 \times 10^5$) but not so high that primary radical termination becomes a problem. Monomer conversions should be sufficiently low that viscosity effects do not influence the data but sufficiently high that effects associated with impurities or with physical phenomena at low conversions do not affect the results significantly.

An investigation into methods of monomer purification was agreed. Members of the Working Party who have access to extremely pure monomers will use the purest monomer available. Others will use monomers purified according to a reasonable procedure without going to extreme lengths.

In an attempt to overcome problems associated with gel permeation chromatography, a new data

analysis procedure will be tried. To assess this procedure and to remove systematic errors, polymers will be analysed in more than one laboratory. A wider range of poly(methyl methacrylate) samples with narrow molecular weight distributions will be prepared for use as standards.

Detailed reaction conditions, specifying initiator concentrations and monomer conversions, were defined for polymerizations of styrene and methyl methacrylate at 50, 60 and 70°C; azobisiso-

butyronitrile will be used as initiator in all cases. Data sets to be submitted by each laboratory were established.

Next meeting

In view of the likely rate of progress and to have data processed in advance, the next meeting will probably be held in the spring of 1984.

G. C. Eastmond

Commission V.1 — Analytical Reactions and Reagents: Freiberg, GDR, 24–25 August 1982

A welcoming address was given by Prof. Zienert, 1st Prorector of the Bergakademie. Members were saddened by the news of the death of Prof. Ronald Belcher (UK National Representative) on 29 June 1982, and stood silently in his memory for a short time.

The first items of business dealt with completed projects: those on *Amines*, on *Amplification Reactions* and on *Selectivity* had been approved for publication and would shortly appear in *Pure and Applied Chemistry*. The comprehensive report on

Compleximetric Indicators was also ready for publication, although some comments from the Divisional Committee remained to be incorporated in the final text. The report on *Polyphenols* had not been considered suitable for publication and had been returned to the author.

The Commission's contribution to the Divisional project on the analysis of selected trace elements in water was next discussed. Regrettably, the coordinator of the several individual contributions (Prof. G. den Boef) was unable to attend the meeting because of a sudden family bereavement. Nevertheless, good progress was made on this item with the help of extensive notes which Prof. D. T. Burns had collected from Prof. den Boef, *en route* to Freiberg,



Meeting of Commission V.1, Bergakademie Freiberg, August 1982.

Back row from left: S. B. Savvin (USSR), D. T. Burns (UK), W. I. Stephen (UK), F. Ingman (Sweden), A. Hulanicki (Poland), J. Garaj (Czechoslovakia), L. Sommer (Czechoslovakia).

Front row: E. Wänninen (Finland), J. Inczédy, Chairman (Hungary), G. Ackermann (GDR).

(Photograph by courtesy of Knopfe, HSB Bergakademie Freiberg, GDR.)

and there should be no difficulty in bringing the Commission's work on this subject to a satisfactory conclusion at the 32nd General Assembly in Lyngby, Copenhagen, in August 1983.

Progress on new projects, initiated at Leuven, formed the next main business and discussion of the report on *Identification and Purity Control of Acid-Base Indicators*, led to suggestions for its improvement and further useful tests to be included. It was felt also that the scope was too restricting and the tests should apply to all acid-base indicators, not simply those used for non-aqueous titrations. The report on *Characterization of Spectrophotometric Methods* would emphasize the chemical aspects of methods using molecular absorption spectrophotometry in UV and visible spectral regions. This work was complementary to that being done by Commission V.4, and hopefully, the final version would be approved at the next meeting of the Commission. Other projects not so far advanced as those

mentioned above, are a *Classification of Interferences* and *Metal Buffers in Chemical Analysis*. These will be discussed in more detail at Lyngby.

The final item of business dealt with completely new projects, the first of which concerned *Organic Analytical Reagents*. After much discussion on the scope of such a project, bearing in mind the vast literature on this subject, it was felt that a useful report on the present and future status of organic analytical reagents with particular reference to complex formation could be prepared, especially if this could be contained within a reasonable length of text. Also under this heading were suggestions from the Division President, Prof. F. Pellerin, for appropriate work on reagents and reactions used in chromatographic procedures, and the Commission undertook to initiate a project on the *Characteristics of Stationary Phases for Gas Chromatography*.

W. I. Stephen

Commission V.8 — Solubility Data:

Raleigh, USA, 30 June–1 July 1982

Twenty-seven attendees met at North Carolina State University to discuss the ongoing activities of IUPAC Commission V.8 and to set plans for future work. Following a general review of progress described by its Chairman, A. S. Kertes, the Commission addressed a number of issues. An organizing committee chaired by J. W. Lorimer was empowered to plan for a symposium entitled "IUPAC Symposium on Solubility Phenomena" in 1984, to be held at the University of Western Ontario. Further information on additional sponsors, symposium programming and related matters were to be reported at the next Commission meeting.

The "Solubility Data Project" now active at Emory University, Atlanta, Georgia, USA, has continued to function and will issue two to three manuscripts for publication in the "Solubility Data Series." H. Miyamoto of Japan has completed his year's sabbatical at Emory University and has returned to his home base. The work at Emory will con-

tinue under the direction of H. L. Clever. The effort there is to be upgraded with the addition of a word processing device which will accelerate the preparation of final manuscripts.

The remainder of the meeting was devoted to the work of the three subcommittees and their efforts to meet schedules for publication of new solubility volumes and a concerted effort by the Commission to finalize on a set of guidelines for authors which serve to promote a more uniform approach to the published solubility data. It was established that while two new volumes would be published in 1982, approximately 14 more volumes were in the final stages of completion and would be published over the 1983 and 1984 period.

New areas of solubility data coverage including gas solubility in metals and polymer solubilities completed the work of the Commission. The next meeting of Commission V.8 will take place at Lyngby, Denmark on 18–26 August 1983.

L. H. Gevantman
J. W. Lorimer

Commission VI.5 — Pesticide

Chemistry: Hakone, Japan,
22–28 August 1982

Membership

The final phase of the amalgamation of the defunct Commissions of Terminal Pesticide Residues and Residue Analysis will be completed by 1983, when membership will be reduced to 12 Titular and 6 Associate Members. The term of office for 10 Members will be completed in 1983; this necessitated considerable discussion on nominations for new Members, based on the criteria of expertise, geographical location and affiliation. Mr. J. A. R. Bates and Dr. R. Greenhalgh were elected as Chairman and Secretary, respectively, as of August 1983 when Dr. Kearney will resign.

Publication

One Commission report (No. 16) entitled "Recommended approaches to the production and evaluation of data on pesticide residues in foods" has been published in *Pure and Applied Chemistry*. This document is being considered as a Guideline by FAO.

Reports

Reports on (1) confirmatory tests, (2) improved cost-effective approaches to residue analysis, (3) impurities in organophosphorus pesticide technical products and formulations, (4) appropriate uses of labelled compounds in the testing and study of their fate in the environment and an update of ETU were submitted for study.

Projects

Several new projects were proposed and are included

with existing ones in the following list. (1) Sixth International Congress, Greenhalgh; (2) Critical evaluation of model ecosystems, Klein; (3) Application of multi-residue methods for the analysis of samples of unknown origin, Ambrus; (4) Pesticide dynamics in ground water, Hemingway; (5) Mammalian metabolism, Miyamoto; (6) Precision, accuracy and compatibility of pesticide residue analytical results, Taylor; (7) Non-extractible residues of pesticides, Esser; (8) Evaluation of environmental behaviour of pesticides, Esser; (9) Microbial adaption to pesticide, Kearney; (10) Estimation of worker hazard/exposure, Drescher; (11) Improved approaches in metabolic studies, Roberts. Projects 9, 10 and 11 are exploratory and of one year duration only.

Pesticide congresses

Attendance at the V IUPAC International Congress

of Pesticide Chemistry, Kyoto, 29 August–4 September 1982 was approximately 1650. Of the scientists registered, 69% came from Japan, the remainder coming from 33 other countries. Of the eight main topics; residues, mode of action, metabolism, structure activity and natural products had 14% each and toxicology, synthesis and formulation 8% each of the total number of papers submitted.

The VI International Congress will be held in Ottawa, Canada on 10–17 August 1986.

Next meeting

The next meeting will be held in Lyngby, Denmark, 19–23 August 1983 in conjunction with the 32nd IUPAC General Assembly.

R. Greenhalgh

Commission VII.3 — Teaching:

Rungstedgaard, Denmark, 9–13 May 1982

The Annual Meeting of the Commission on Teaching in Clinical Chemistry was held at the 1st General Conference of the International Federation of Clinical Chemistry (IFCC).

Reports were received from the appropriate Titular Member on the progress of current projects. The document "Approved Recommendation (1980) on a Scheme for a two year Post-Graduate Course in Clinical Chemistry" had been submitted to IUPAC and approved and was now ready for publication in *Pure and Applied Chemistry*, but was awaiting IFCC approval so that it could be published on behalf of both bodies simultaneously.* Dr. Schwartz had been asked and agreed to write to the Education Ministers in Latin American countries stating that this document was accepted by IFCC, if and when this is the case, as it was felt this would help the adoption of the recommendations in these countries. Dr. Fraser who has recently taken over the responsibility of the Commission's affairs in Southeast Asia and the Pacific stated that he had written to representatives of 18 countries in that area asking them to state their training and educational problems. Although he had received only a few replies it was agreed that those members of the Commission who were able to attend the 2nd Asian/Pacific Congress of Clinical Chemistry in Singapore, September 1982, should organize a poster display and open meeting at the congress. In the Self Instruction Material project in which Dr. Worth has liaised with Dr. Woodward, Clinical Research Centre, UK, there are two programmes in preparation, an introductory one of four packages and one of five packages on reagent preparation. The latter was commissioned by WHO. A draft document "Training Programmes for Technical and Scientific Personnel" was presented to

the meeting. After considerable discussion it was agreed that this should be redrafted as a more specific document, and should try to meet the needs of WHO's definition of Grade B Technician. Dr. Porter reported that no additions had been made to his reading list during the last year, but it was suggested and agreed that it should be advertized at teaching symposia and congresses.

A number of other matters of importance were discussed including liaison with the IUPAC Committee on Teaching of Chemistry, and topics for future projects. At a joint meeting with the Committee of Teaching of Chemistry at the IUPAC General Assembly, Leuven, 1981, it was agreed that there was little common ground in the content of the business of the two bodies, although their aims were similar, and consequently close liaison was desirable and important. The Commission reiterated this view and asked Dr. Porter to act as its liaison officer in this respect.

In the field of new projects the Commission felt it should investigate the use of visual aids in training and education. It also felt that assistance might be sought from industry and bodies such as the Centers for Disease Control, USA, in this and agreed to explore these possibilities. The role of clinical chemistry in the medical curriculum and the teaching of clinical chemistry to clinicians were also discussed and it was agreed should be investigated further.

An important part of the Commission's work could be in the organization of workshops for education and training at regional and international congresses. This was discussed at some length and two draft proposals were formulated.

The next annual meeting of the Commission will be at the 32nd IUPAC General Assembly in Copenhagen, August 1983.

H. G. J. Worth

*This report has now been published in *Pure & Appl. Chem.*, Vol. 54, No. 3, pp. 557–465.

Commission VII.4 — Toxicology:

Dublin, Ireland, 9 June 1982

1. Reports on Sub-committee activities

Aluminium

Plans are complete for a joint meeting with the Health and Safety Directorate of the Commission of the European Communities (CEC). The meeting will be an International Workshop on the Role of Biological Monitoring in Prevention of Aluminium Toxicity in Man: Aluminium Analysis in Biological Fluids and will be held in Luxembourg, 5–7 July 1982. Means of publishing the Proceedings of this Conference are being investigated.

Cadmium

A Workshop on Biological Indicators of Cadmium Exposure: Diagnostic and Analytical Reliability will be held in Luxembourg, 7–9 July 1982 immediately following the Aluminium Workshop. There will be joint sponsorship with the CEC. A second interlaboratory survey has been completed and work is underway on a blood cadmium reference method. Dr. R. F. M. Herber is preparing a review on β_2 -microglobulin as an index of cadmium toxicity. It was proposed that consideration be given to the development of a reference method for metallothionein.

Nickel

A draft document on collection, storage and shipment of biological samples for nickel analysis has been prepared by Dr. Nieboer. A task force has been established to work on the classification and

nomenclature of nickel-binding macromolecular constituents in tissues. Dr. Nieboer has been appointed to succeed Dr. Sunderman as Chairman of the Sub-committee.

Selenium

An interlaboratory survey program with 40 participants has been initiated.

Chromium

The Commission supported the establishment of a Subcommittee on Chromium and a search is underway for suitable members and a Chairman.

2. Second International Conference of Clinical Chemistry and Chemical Toxicology of Metals, Montreal, 19–22 July 1983

Formal approval from Prof. Nagakura has been received. Local arrangements have been finalized for the Le Centre Sheraton as the headquarters hotel. The first circular has been mailed. The plenary lecturers have been identified and contacted. Negotiations are underway for publication of the Proceedings.

3. New projects

An ad-hoc task force has been established to study quality control and reference materials in the toxicology laboratory.

4. Next meeting

The next meeting of the Commission will be held in Lyngby, Denmark, August 1983.

J. Savory

IUPAC CONFERENCES

Additional information from address in parentheses

1983

IUPAC CONGRESS

June 4 - 12. 29th International Congress of Pure & Applied Chemistry. Cologne, Federal Republic of Germany.

(General Secretariat of the 29th IUPAC Congress, Dr. W. Fritsche, c/o Gesellschaft Deutscher Chemiker, P.O. Box 900440, D-6000 Frankfurt/M 90, Federal Republic of Germany.)

BIOINORGANIC CHEMISTRY

June 13 - 17. 1st International Conference on Bioinorganic Chemistry. Florence, Italy.

(Prof. A. Scozzafava, Istituto di Chimica Generale, Facoltà di Farmacia, Via G. Capponi 7, 50121 Florence, Italy.)

ZIRCONIA TECHNOLOGY

June 21 - 23. 2nd International Conference in the Science and Technology of Zirconia (ZIRCONIA-83). Stuttgart, Federal Republic of Germany.

(Nils Claussen, Max-Planck-Institut für Metallforschung, Institut für Werkstoffwissenschaften, Heisenbergstrasse 5, D-700 Stuttgart 80, Federal Republic of Germany.)

SPECTROSCOPY

June 26 - July 1. 23rd Colloquium Spectroscopicum Internationale. Amsterdam, The Netherlands.

(23rd CSI, c/o Organisatie Bureau Amsterdam BV, Europaplein, 1078 GZ Amsterdam, The Netherlands.)

PROPERTIES OF COPOLYMERS

July 11 - 14. 24th Prague Microsymposium: Copolymers, Structure and Solution Properties. Prague, Czechoslovakia.

(Dr. P. Kratochvil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

BORON CHEMISTRY

July 11 - 15. Imeboron V (Organic and Inorganic). Swansea, Wales, UK.

(Prof. A. Pelter, Department of Chemistry, University College of Swansea, Singleton Park, Swansea, West Glamorgan SA2 8PP, UK.)

ANALYTICAL CHEMISTRY

July 17 - 23. SAC 83 Conference and Exhibition. Organized by the Analytical Division of the Royal Society of Chemistry, University of Edinburgh, Edinburgh, UK.

(Dr. J. M. Ottaway, Department of Pure & Applied Chemistry, University of Strathclyde, Cathedral Street, Glasgow G1 1X1, UK.)

POLYMER STABILITY & PROCESSING

July 18 - 21. 25th Prague Microsymposium: Processing and Long-Term Stabilities of Hydrocarbon Polymers. Prague, Czechoslovakia.

(Dr. J. Pospíšil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

TOXICOLOGY OF METALS

July 20 - 23. 2nd International Symposium on Clinical Chemistry and Chemical Toxicology of Metals. Montreal, Canada.

(Dr. J. Savory, University of Virginia Medical Center, Department of Pathology, Box 168, Clinical Laboratories, Charlottesville, VA 22908, USA.)

PLASMA CHEMISTRY

July 24 - 28. 6th International Symposium on Plasma Chemistry. Montreal, Canada.

(Prof. M. Boulous, Département de génie chimique, Faculté des sciences appliquées, Université de Sherbrooke, Sherbrooke, Québec, Canada J1K 2R1.)

IUPAC GENERAL ASSEMBLY

August 18 - 26. 32nd IUPAC General Assembly. Lyngby/Copenhagen, Denmark.

(IUPAC Secretariat, 2 - 3 Pound Way, Cowley Centre, Oxford OX4 3YF, UK.)

CHEMICAL EDUCATION

August 21 - 26. 7th International Conference on Chemical Education "Chemistry Education and Society". Montpellier, France.

(Pr. M. Chastrette, Laboratoire de Chimie Organique Physique, Université Lyon I, 43, Bld du 11 Novembre 1918, 6922 - Villeurbanne, France.)

HETEROCYCLIC CHEMISTRY

August 21 - 26. 9th International Congress of Heterocyclic Chemistry. Tokyo, Japan.

(Yuichi Kanaoka, Faculty of Pharmaceutical Sciences, Hokkaido University Sapporo, 060 Japan.)

ORGANOMETALLIC CHEMISTRY

August 28 - September 1. 2nd IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis. Dijon, France.

(Prof. J. Tirouflet, Université de Dijon, Boite Postale 138, 21004 Dijon Cedex, France.)

MICROCHEMICAL TECHNIQUES

August 28 - September 2. ISM '83, 9th International Symposium on Microchemical Techniques. Amsterdam, The Netherlands.

(Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam, The Netherlands.)

CATIONIC POLYMERIZATION

August 30 - September 2. 6th International Symposium on Cationic Polymerization and Related Processes. Belgium.

(Prof. E. Goethals, Institute of Organic Chemistry, Rijksuniversiteit-Gent, Krijgslaan 281 (S-4) B-9000 Ghent, Belgium.)

FOURIER TRANSFORM SPECTROSCOPY

September 5 - 9. International Conference on Fourier Transform Spectroscopy. Durham, UK.

(J.R. Birch, Division of Electrical Science, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK.)

MACROMOLECULES

September 5 - 9. 29th International Symposium on Macromolecules. Bucharest, Romania.

(Acad. Cristofor Simionescu, Institutul de Chimie Macromoleculară Petru Poni Alea Grigore Ghica Vodă Nr. 41A, Iași, Romania.)

PHOSPHORUS CHEMISTRY

September 5 - 9. International Conference on Phosphorus Chemistry. Nice, France.

(Prof. J. G. Riess, Laboratoire de Chimie Minérale Moléculaire, Université de Nice, Parc Valrose, 06034 Nice, France.)

CRYSTAL GROWTH

September 12 - 16. 7th International Conference on Crystal Growth, ICCG-7. Stuttgart, FRG.

(Prof. Dr. M. Pilkuhn, Universität Stuttgart, Pfaffenwaldring 57, 7000 Stuttgart 80, FRG.)

MOSSBAUER EFFECT

September 26 - 30. International Conference on Applications of the Mossbauer Effect. Alma Ata, USSR.

(Prof. V. I. Goldanskii, Institute of Chemical Physics, Academy of Sciences of the USSR, Kosygin Street 4, Moscow 117977 SZD 1, USSR.)

ORGANOMETALLIC CHEMISTRY

October 10 - 14. 11th International Conference on Organometallic Chemistry. Pine Mountain, GA, USA.

(Dr. E. C. Ashby, School of Chemistry, Georgia Institute of Technology, Atlanta, GA 30332, USA.)

1984

BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.

(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.

(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.

(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.

(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

Chemistry International

is the news magazine of the

INTERNATIONAL UNION of PURE and APPLIED CHEMISTRY (IUPAC)

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Vice-President: W. G. SCHNEIDER (*Canada*)

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The International Union of Pure and Applied Chemistry (IUPAC), formed in 1919, is a voluntary, non-governmental, non-profit association of organizations, each of which represents the chemists of a member country.

Its objectives are:

to promote continuing co-operation among the chemists of the member countries;

to study topics of international importance to pure and applied chemistry which need regulation, standardization, or codification;

to co-operate with other international organizations which deal with topics of a chemical nature;

to contribute to the advancement of pure and applied chemistry in all its aspects.

The membership of IUPAC presently comprises 44 countries, each represented by a national organization, such as an academy of science or research council.

NATIONAL MEMBER ORGANIZATIONS

Academy of Scientific Research and Technology (**Arab Republic of Egypt**)

Asociación Química Argentina (**Argentina**)

Australian Academy of Science (**Australia**)

Verein Österreichischer Chemiker (**Austria**)

Comité National Belge de Chimie (**Belgium**)

Associação Brasileira de Química (**Brazil**)

Bulgarian Academy of Sciences (**Bulgaria**)

National Research Council of Canada (**Canada**)

Chinese Chemical Society, and Chemical Society located in Taipei, China (**China**)

Ministerio de Minas y Petróleos (**Colombia**)

Academia de Ciencias de la República de Cuba (**Cuba**)

Czechoslovak National Committee of Chemistry (**Czechoslovakia**)

Det Kongelige Danske Videnskabernes Selskab (**Denmark**)

Suomen Kemian Seura (**Finland**)

Comité National Français de la Chimie (**France**)

Deutscher Zentrallausschuss für Chemie (**Federal Republic of Germany**)

Akademie der Wissenschaften der DDR (**German Democratic Republic**)

Association of Greek Chemists (**Greece**)

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Iraqi Chemical Society (**Iraq**)

Royal Irish Academy (**Ireland**)

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Science Council of Japan (**Japan**)

Malaysian Institute of Chemistry (**Malaysia**)

Koninklijke Nederlandse Chemische Vereniging (**Netherlands**)

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Svenska Nationalkommittén för Kemi (**Sweden**)

Schweizerisches Komitee für Chemie (**Switzerland**)

Supreme Council of Sciences (**Syrian Arab Republic**)

Türkiye Kimya Dearneği (**Turkey**)

Academy of Sciences of USSR (**USSR**)

Royal Society (**United Kingdom**)

National Research Council, National Academy of Sciences (**USA**)

Instituto Venezolano de Investigaciones Científicas (**Venezuela**)

Unija Hemijskih Društava Jugoslavije (**Yugoslavia**)

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Chemistry International

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)



Congress Centres, Cologne

Congress Centre West in foreground

1983, No. 2 (April)



Pergamon Press

CHEMISTRY INTERNATIONAL

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)

EDITOR: Roger Fennell

PRODUCTION ASSISTANT: Julie Sullivan

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At the time of writing this, my second editorial, I find myself at a severe disadvantage. This is because the first issue has not yet been printed, let alone distributed, so that not only have I no reader reaction to that first issue but I have not even seen the final result of the efforts that went into producing it. I am therefore forced to abandon the habits (and principles) of a lifetime in an analytical laboratory and to start a second experiment before having any indication of the effectiveness of the first. That I have heard it said, surely slanderously, that this state of affairs is not unknown in other branches of chemistry is no consolation. So that I shall not be put into exactly the same position again, I repeat my appeal for comments and suggestions on the style and contents of this second phase of *Chemistry International*. Your letters will be most welcome, whether for publication or not; if not, please say so when you write.

You cannot have failed to notice that the first issue contained a relatively large number of photographs of people — mainly of the people who guide the affairs of IUPAC. Not a complete set but we hope to be able to make good the deficit in future issues. This time the pictures are scarce and of places not people. In addition to this change, the second issue also introduces two possible regular items — details of all IUPAC-sponsored conferences and notes on the publications of other organizations that have connections with the Union. By thus changing, without a statistical design, more than one condition in an experiment, I have had to abandon yet another of my former basic principles.

Even at this early stage as an editor, I am finding indications that nomenclature, terminology and symbols are continuing to be a source of difficulty. This field of work has been, is, and inevitably will be, one of the main areas of expertise within the Union (*Chem. Int.*, 1982, No. 4, pp. 21–22). It is an area once described by Sir Harold Thompson as ‘incredibly dull but vitally important’. I know, from personal experience, what painstaking work is involved, what frustrations can be experienced, but what relief and sense of achievement is felt when, at last, agreement is reached. Question — is this the sort of work which will attract the capable young chemists that may wish to become Affiliate Members (*Chem. Int.*, 1983, No. 1, p. 8)? The IUPAC Bureau is aware that this is one of the areas where the turnover of Commission members may have to be less frequent than might be, or become, normal in others. The findings of Prof. Zollinger’s ad-hoc committee (*Chem. Int.*, 1983, No. 1, p. 4) will be of great interest.

OTHER PEOPLE'S PUBLICATIONS

If you care to look at pages 3–5 of *Chemistry International*, 1982, Supplement, you will see a list of Associated Organizations and on pages 11 and 12 an indication of more 'outside' bodies with which IUPAC has dealings. Many of these organizations produce their own publications, some of which are received by the IUPAC Secretariat. There is little doubt that members of IUPAC Divisions who are concerned with the specialist subjects covered by these publications already receive them or know about their contents. However, it seems reasonable to try to widen knowledge of their existence within IUPAC — just in case someone has been missing something. To this end we are listing those received comparatively recently, with an indication of the contents that may be of interest to people not intimately involved with the subject. Your Editor freely admits his possible fallibility in preparing these brief extracts and would welcome expert assistance. It is, of course, inevitable that the contents of this section will be out of date, particularly at first, but we hope not so much so as to make the effort of finding and printing the information of no value.

If you find something that does interest you and about which you would like to know more, would you please, in the first instance, refer any enquiries to the relevant people listed in the CI Supplement? Unfortunately staffing levels in the IUPAC Secretariat are such that additional enquiries might take a long time to answer.

Federation of Asian Chemical Societies (FACS)

Proceedings of the Regional Workshop on Maintenance of Scientific Instruments, Kuala Lumpur, Malaysia, 26–28 November 1981

In this 150-page, soft-cover volume are reports from 8 countries on the state of instrument maintenance and repair, 7 more detailed papers on the subject particularly as affecting Malaysian Institutions and 3 papers from the manufacturer's point of view. The final 20 pages reproduce what was said at what appears to have been a very frank discussion. Although some of the problems are regional, there is no doubt that many are common to those in Europe (and possibly elsewhere).

The Proceedings are available at US\$8 per copy inclusive of registered sea-mail postage from Hon. Secretary, Malaysian Institute of Chemistry, c/o Rubber Research Institute of Malaysia, P.O. Box 150, Kuala Lumpur, Malaysia.

FACS Newsletter No. 2, August 1982. Report on the Regional Workshop on Chemistry, Industry and the Citizen, Colombo, June 1982. A recommendation of particular interest to IUPAC — "International organizations (e.g. UNESCO, IUPAC, FACS, etc.) should collate and disseminate information on technology (e.g. chemical directory, workshops, exchange of personnel, etc.)." A list of the contact points of the 15 member Societies of the Federation is given.

International Council of Scientific Unions (ICSU)

ICSU Newsletter No. 10, June 1982. Reports of meetings of the ICSU Executive Board, COSPAR, COSTED, SCOPE, COGENE, ad-hoc group on Radioactive Waste Disposal, ICSU-AB: article on IUPAC by Prof. H. Zollinger.

ICSU Newsletter No. 11, September 1982. Reports on 19th General Assembly of ICSU, 21st General Assembly of IUBS: article on IUPAC.

ICSU Committee on the Teaching of Science (CTS)

Newsletter No. 9, August 1982. A list of relevant publications. See also *Biochem. Educ.*, **10**, 148–150 (1982): Education and training of science technicians — A report of the work of ICSU-CTS (D. J. Waddington).

ICSU Scientific Committee on Problems of the Environment (SCOPE)

Newsletter No. 18, September 1982. Report of 5th General Assembly.

ICSU Committee on Space Research (COSPAR)

Information Bulletin No. 94, August 1982. Report of 24th Plenary Meeting of COSPAR and Associated Activities: list and news of satellites and space probes.

ISCU Commission on Application of Science to Agriculture, Forestry and Aquaculture (CASAFA)

Newsletter, October 1982. Establishment of a Secretariat at P.O. Box 8500, Ottawa, Ontario, Canada K1G 3H9.

International Union of Biochemistry (IUB)

Newsletter No. 20, July 1982. Nomenclature recommendations.

International Union of Pure and Applied Biophysics (IUPAB)

IUPAB News, June 1982. Minutes of the joint meeting of the Councils of IUB and IUPAB, August 1981: organization, functions and membership of IUPAB Special Commissions 1982–1984.

IUPAB News, September 1982. Agenda for the meeting of the IUPAB Council: preparations for the 1984 Biophysics Congress.

European Photochemistry Association (EPA)

EPA Newsletter, October 1982. Article on photochemistry in Germany: Conference reports — 9th IUPAC Symposium on Photochemistry, Paris, France, July 1982; 5th International Symposium on Photophysics and Photochemistry of Coordination Compounds, Gif-sur-Yvette, August 1982; International Symposium on Theoretical Organic Chemistry, Dubrovnik, Yugoslavia, September 1982.

Groupement pour l'Avancement des Methodes Spectroscopiques et Physicochimiques d'Analyse (GAMS)

GAMS Information Bulletin No. 75, September and October 1982. Details of symposia, conferences and courses.

GAMS Information Bulletin No. 76, November and December 1982. Changes in editorial policy of the journal ANALYSIS: information about the Centre d'Informations Spectroscopiques: details of symposia, etc.

International Federation of Clinical Chemistry (IFCC)

IFCC News No. 30, 1982/1. News of IUPAC Clinical Chemistry Division: IFCC publications 1975–1982: article on standardization, standards and SI units. Two recommendations: IFCC 1982/1 Provisional guidelines (1981) for listing specifications of flame emission spectrometers, *J. Clin. Chem. Clin. Biochem.*, **20**, 259–261 (1982); IFCC 1982/2 Provisional guidelines (1981) for listing specifications of atomic absorption spectrometers, *J. Clin. Chem. Clin. Biochem.*, **20**, 263–266 (1982).

IFCC News No. 31, 1982/2. Work of Expert Panels on Quantities and Units, pH and Blood Gases, Instrumentation, Enzymes, Drug Effects, Diagnostic Reagent Sets.

IFCC News No. 32, 1982/3. Education in clinical chemistry: standard temperature for clinical laboratories — 30 or 37°C: new pH scale.

European Federation of Biotechnology (EFB)

Newsletter No. 5, September 1982. Article on education for biotechnology (BT): definition of BT: Project 'A Community Strategy for European BT': research in China: list of active laboratories: calendar of events.

International Union of Food Science and Technology (IUFoST)

IUFoST Newsletter, New Series, No. 6, June 1982. Outline programme of 6th Congress, Dublin, September 1983: lists of relevant symposia and conferences and of proceedings of symposia held between 1978 and 1981.

IUPAC PEOPLE

Congratulations to:

Dr. P. C. Kearney (Vice-President Division VI, Chairman Commission VI.5) on the receipt of the Burdick & Jackson International Award for Research in Pesticide Chemistry.

Dr. T. S. West (Assistant Secretary General) on the reception of an honorary Professorship from the University of Aberdeen.

IUPAC-SPONSORED CONFERENCES

A calendar of IUPAC-sponsored conferences has been a regular feature of *Chemistry International*, as it was of the former *Information Bulletin*. The latter also used to include more details of forthcoming meetings so that readers could have a clearer picture of their scope. This was considered a worthwhile part of the Bulletin and it is therefore being revived. Details will be given as early as possible and organizers of conferences will be asked to provide these before issue of the final circulars so that we can help to stimulate interest amongst our readers. As this is the first attempt to cover all IUPAC-sponsored meetings for some time, most of the details given below have been abstracted from circulars; the Editor is grateful to those who provided him with extra, advance information.

1st International Conference on Bioinorganic Chemistry, Florence, Italy, 13–17 June 1982

The Conference will be held in the Palazzo degli Affari, Florence, and will include plenary and session lectures, minisymposia, round tables and poster sessions

The *plenary lectures* will be:

Electron transfer and ligand binding in metalloproteins (M. Brunori, Italy).

Mechanistic aspects of coenzyme B₁₂-dependent rearrangements: organometallics as free radical precursors (J. Halpern, USA).

The atomic structures of oxymyoglobin and oxyhaemoglobin (M. Perutz, UK).

Electronic structures of active sites (E. I. Solomon, USA).

Metal ions in biological space and time (R. J. P. Williams, UK).

Minisymposia and *round tables* have been organized to cover the following topics:

Metal ion transport and accumulation in living organisms.

Metal toxicity and therapy, including environmental aspects.

Theoretical models.

Artificial ion carrier molecules and transport processes.

Models for metal ion binding sites and metal catalysis in enzymes.

Cytochrome oxidase and blue oxidases.

Bioinorganic electron transfer processes.

Calcium binding sites in proteins.

Are synchrotron radiation studies (including EXAFS) breakthroughs in structural studies of metalloproteins?

How much do we know about metal-metal interactions?

Owing to the large field to be covered, in only two parallel sessions, most of the contributed papers will

be in the form of posters; the contributions will span the entire range of interactions of metals and metal ions with molecules of biological interest and with living organisms.

2nd International Conference on the Science and Technology of Zirconia, Stuttgart, FRG, 21–23 June 1983

The Conference will be held at the Max-Planck-Institute, Stuttgart. The Institute is actually in Bösau, a small suburb about 12 km southwest of the centre of Stuttgart. The Conference will reflect the increasing interest in the properties and applications of zirconia, emphasis being on transformation toughening, use of zirconia-based ceramics in friction and wear applications, ionic conduction, etc. Over 100 papers have been divided into six sessions, each consisting of a keynote lecture, six contributed lectures and about 20 poster papers. There will also be an exhibition demonstrating the wide areas of industrial application of zirconia.

The *keynote lectures* to be presented are:

New processing techniques for zirconia ceramics (R. J. Brook, UK).

Structural applications of zirconia composite ceramics (R. C. Garvie, Australia).

Defect structure and transport properties of zirconia-based oxide electrolytes (J. F. Baumard, France).

Zirconia and hafnia-based electrolytes for oxygen control devices (D. Janke, FRG).

Phase transformations in zirconia: diffusion-controlled reactions (A. H. Heuer, USA).

Mechanisms of transformation toughening (A. G. Evans, USA).

Registration for the Conference and requests for hotel accommodation should be completed by 30 April 1983.

**23rd Colloquium Spectroscopicum
Internationale, Amsterdam, Netherlands,
26 June–1 July 1983**

The scientific sessions of 23 CSI, which includes the 10th International Conference on Atomic Spectroscopy, will take place in the International Congresscentrum RA1, situated in the southern part of Amsterdam. To allow in-depth discussion on the newest developments and to avoid too many parallel oral sessions, heavy emphasis is being placed on poster presentations which will form the heart of the conference. Invited lectures are devoted to topics of general interest and a representative selection has been made of the papers submitted for oral presentation — to take place in no more than three parallel sessions.

The *plenary lectures* to be given are:

Atomic physics and atomic spectroscopy: mother and daughter? (C. Th. J. Alkemade, Netherlands).
Spectrochemical characterization of some trace elements in hydro- and biosphere (K. Fuwa, Japan).
Optical methods of remote sensing of atmospheric pollution (P. Guillot, Belgium).
Bridging the gaps in analytical atomic spectrometry (J. C. Van Loon, Canada).

The *invited lectures* will be:

Recent progress and future perspectives in mass spectrometry for inorganic analysis (F. Adams).
Understanding the causes of matrix phenomena and methods for obviating them in AES (J. S. Beaty).
An assessment of a variety of spectroscopic techniques for micro and surface analysis (A. Benninghoven).
New approaches to quantitative X-ray microanalysis of thin films and surfaces (J. D. Brown).
Recent advances and future prospects in phosphorescence and fluorescence spectroscopy (L. J. Cline-Love).
Electrothermal AAS — Present understanding and future needs (W. Frech).
Geostandards and geochemical analysis (K. Govindaraju).
Mini, micro, and high-efficiency torches for the ICP — Toys or tools? (G. M. Hieftje).
Detection and measurement of radiation: rewards and penalties of new approaches (G. Horlick).
New developments in infrared and Raman spectroscopy (Pham V. Huong).
New approaches to the separation of evaporation and atomization-excitation in atomic spectroscopy (T. Kantor).
X-ray fluorescence analysis anno 1983 (J. Kikkert).
Twenty-five years furnace AAS (B. V. L'vov).
Atomic spectrometry for trace determinations in the environment with a view to government regulations (A. Minderhoud).
Carbon furnace atomic emission spectrometry — Past, present and future (J. M. Ottaway).
Selective laser spectroscopy of polyatomic molecules: principles, applications and oppor-

tunities (R. I. Personov).

Approaches for clarifying excitation mechanisms in spectrochemical excitation sources: bridging a gap between plasma physics and spectrochemists (D. C. Schram).

Atomic absorption spectrometry a valuable tool for trace and ultratrace determinations of metals and metalloids in biological matrices (M. Stoeppler).

The oral submitted papers have been divided between twelve *symposia*:

Characterization of excitation sources for atomic emission spectrometry.

Atomic emission spectrometry: from source to detector.

Plasma sources: sample introduction.

Atomic absorption spectrometry: from sample to data handling.

Atomic absorption spectrometry: studies involving magnetic fields.

Recent advances in atomic fluorescence spectrometry.

X-ray fluorescence spectrometry: applications.

Molecular spectroscopy: miscellaneous topics.

Applications: surface analysis and mass spectrometry.

Applications: environmental.

Applications: biological-clinical-pharmaceutical-agricultural-food.

Applications: industrial and geological materials.

Over 350 poster presentations have been divided into 43 sections covering all aspects of spectrochemical analysis and there will be an instrument exhibition conveniently located.

The Conference languages are English, French and German. Translation facilities will not be available and the use of English is encouraged.

**24th Prague Microsymposium —
Copolymers: Structure and Solution
Properties, Prague, Czechoslovakia,
11–14 July 1983**

All sessions of the Microsymposium will be held in the Institute of Macromolecular Chemistry, Prague, and the working language will be English. The scope of the Symposium will embrace structure of copolymer molecules and properties of their ensembles; characterization of copolymers through study of solution properties; domain structure of copolymers; advanced methods of synthesis of copolymers with defined structure. Topics to be covered within this scope are: synthesis of tailor-made copolymers; architecture and sequence arrangement of copolymer chains; solution properties of copolymers; heterogeneity in chemical composition; supermolecular structure of block and graft copolymers in solution and in solid state; thermodynamics of copolymer systems. Contributions covering original unpublished work on these topics will be presented as posters.

Invited lectures to be given are:

Characterization of copolymers by means of liquid chromatography (G. Glöckner, GDR).

Interactions between unlike polymers vs dilute solution properties of copolymers (H. Inagaki, Japan).

Characterization of copolymers by NMR spectroscopy (K. J. Ivin, UK).

Thermodynamics of random copolymer systems (R. Koningsveld, Netherlands).

Synthesis of tailor-made block, segmented, graft and ion-containing copolymers (J. E. McGrath, USA).

Relationships between molecular architecture, morphology, and physical properties of block copolymers (D. J. Meier, USA).

Analysis of binary statistical copolymerization considering the change in chemical heterogeneity of copolymers with conversion (V. A. Myagchenkov, USSR).

Micelle formation by block copolymers in organic solvents (C. Price, UK).

Colloidal properties of block and graft copolymers (G. Riess, France).

Forced ideal quasiliving copolymerization (F. Tüdös, T. Kelen and J. P. Kennedy, Hungary, USA).

Intending participants should have returned their application forms before 1 April 1983; any applications received after 15 May 1983 will be subject to a US\$15 surcharge.

Imeboron V: 5th International Symposium on Boron Chemistry, Swansea, UK, 11–15 July 1983

The Symposium will cover new developments in boron chemistry since the last Symposium (held at the University of Utah, USA, in 1979) and will be held at the University College of Swansea, an attractive modern university situated on the west side of the city of Swansea, the second largest city in Wales. Sessions will take place in the lecture theatres of the Departments of Chemistry and Physics: the programme comprises invited plenary and session lectures and a number of contributed papers; all presentations will be oral, the official language being English.

Plenary lectures to be given are:

Some recent developments in the chemistry of organoboranes (H. C. Brown, USA).

Metalloboranes 1983 (N. N. Greenwood, UK).

Electron correlation effects in boron hydride structures, intermediates and reactions (W. N. Lipscomb, USA).

The chemistry of 1-boraadamantane (B. Mikhailov, USSR).

The chemistry of dicoordinate and tricoordinate boron cations (H. Nöth, FRG).

Invited session lectures will include:

Application of chiral organoboranes in asymmetric synthesis (M. M. Midland).

Boron mediated diastereoselective carbon-carbon

bond formation in the addition of allyl boronates to aldehydes (R. W. Hoffman).

Carbon-rich and metal-rich boron clusters: emerging patterns in structure and reactivity (R. N. Grimes).

The usage of NMR spectroscopy in polyhedral boron chemistry (J. D. Kennedy).

Use of boron reagents for stereo control (S. Masamune).

Recent theoretical studies on metalloboranes and metallocarboranes (D. M. P. Mingos).

Ligand properties of 1,3-diborolenes (W. Siebert).

New selective reactions and reagents by the combination of boron compounds and organometallic compounds (Y. Yamamoto).

Syntheses via alkyne-derived organoborons (G. Zweifel).

Applications for attendance should be made before 30 April 1983; late applications will attract a £10 surcharge and acceptance after this date cannot be guaranteed.

SAC 83: International Conference and Exhibition on Analytical Chemistry, Edinburgh, UK, 17–23 July 1983

The Conference is to be held at the University of Edinburgh — the Appleton Tower, George Square — and is aimed to cover all aspects of analytical chemistry. As well as plenary and invited lectures (listed below) there will be sessions for contributed papers and poster presentations in the lecture programme. Subjects for *Group Symposia* will include: The Developing Role of the Public Analyst; Capillary Chromatography in Pharmaceutical Analysis; Mass Spectrometry; The Uses of Thermal Methods in Analytical Chemistry; Analytical Science — How Much Chemistry Should Be Taught?; Microcomputers in Analysis; Computer Networks; Advanced Analytical Techniques and Their Application in Clinical Analysis; Recent Advances in Analytical Atomic Spectroscopy.

Plenary lectures to be presented are:

Photoluminescence and chemiluminescence analysis: recent developments and future prospects (J. N. Miller, UK).

Capillary separation techniques: a key to future improvements in resolution and sensitivity (M. V. Novotny, USA).

Design and application of neutral carrier-based ion selective electrodes (W. Simon, Switzerland).

Continuum source atomic absorption spectrometry: past, present and future prospects (T. C. O'Haver, USA).

The *invited lectures* will be:

Trace speciation in food (D. R. Williams).

Flow injection analysis reviewed (J. Ruzicka and E. H. Hansen).

New forms of mass spectrometer for analytical work (J. H. Benyon).

Determination of organic compounds by solution thermochemistry (L. S. Bark).

The evolution of the analytical applications of thermogravimetry (C. J. Keatch).
 Mineralization of biological material for elemental trace analysis (L. Kosta and M. Franko).
 Newer analytical techniques applicable to clinical chemistry (A. C. Moffat).
 Recent applications of the inductively-coupled plasma (S. Greenfield).
 Current advances in analytical inorganic mass spectrometry (F. Adams).
 Plasma source mass spectrometry — a promising new hybrid technique (A. L. Gray).

A new and exciting feature will be a group of one-day *Update Courses* which will provide tutorial and practical demonstrations and discussions of the selected techniques. Courses will be run on:

Flow injection analysis.
 Inductively-coupled plasma emission spectrometry.
 Microcomputers in analytical chemistry.
 Narrow column HPLC.
 New techniques in fluorescence.

The exhibition of scientific apparatus and books will be open only on the first three days of the Conference.

Intending participants should send in their application forms before 6 June 1983 or they will be liable to a surcharge of £10.

25th Prague Microsymposium — Processing and Long-term Stabilities of Hydrocarbon Polymers, Prague, Czechoslovakia, 18–21 July 1983

All sessions of the 25th Microsymposium will be held in the Institute of Macromolecular Chemistry, Prague, and the working language will be English. The Symposium will cover new findings dealing with thermo-oxidative and photo-oxidative degradations of hydrocarbon polymers and with their stabilization during processing and application; developments in the knowledge of mechanisms of physical and chemical processes involved; new theoretical and experimental approaches to solution of stability problems. Interest is centred on saturated and unsaturated hydrocarbon polymers, i.e. on polyolefins, polystyrenes and rubbers. Papers dealing with other synthetic polymers can be accepted only when contributing to the knowledge of stability of hydrocarbon polymers. Generally, processes of burning are not to be included in the programme.

Topics to be discussed within the scope of the meeting as outlined above are theoretical problems involved in thermo-oxidative and photo-oxidative deterioration processes; catalytic and/or sensitizing influences of impurities and of structural features of macromolecular systems and the atmospheric pollutants involved; mechanism of activity of stabilizers; mutual influence and relations involved in systems of various stabilizers or mixtures of stabilizers with other additives; physical relations in systems stabilizer-polymeric matrix; rating of

deterioration effects and activity of stabilizers.

Invited lectures to be given are:

Thermal and oxidative degradations of polyolefins, polydienes and polyacetylenes and their inhibition (C. J. W. Chien, USA).
 Synergism of stabilizers (C. R. H. I. de Jonge, Netherlands).
 Computer modelling of photo-oxidation processes in polyolefins (J. Guillet, Canada).
 Perspectives on the stabilization of hydrocarbon polymers against thermo-oxidative degradation (P. P. Klemchuk and P.-L. Horng, USA).
 The role of hydroperoxides in photo-oxidation of polyolefins, polyamides and polyurethanes (J. Lemaire, France).
 Mechanisms of antioxidant action of organic phosphorus compounds (K. Schwetlick, GDR).
 Oxidative transformations of antioxidants during processing (G. Scott, UK).
 Synergism phenomena in photostabilization of polyolefins (V. Ya. Shlyapintokh, USSR).
 Radical migrations as an elementary process in degradation (J. Sohma, Japan).
 Similarities and differences in the oxidation of polyethylene and polypropylene (F. Tüdös, Hungary).
 Photostabilization of polyolefins (D. M. Wiles, Canada).

Applications to participate in the Symposium should be received by the organisers by 1 April 1983; applications received after 15 May 1983 will be liable to a US\$15 surcharge.

2nd International Conference on the Clinical Chemistry and Chemical Toxicology of Metals, Montreal, Canada, 19–22 July 1983

The scientific meetings will be held in Le Centre Sheraton Hotel in Montreal. Although the official language of the Conference will be English, scientific communications may be given in French or English. Sixteen plenary lectures, up to 75 submitted papers and/or poster sessions and a scientific exhibition are planned.

Topics to be covered by the *plenary lectures* and the speakers are:

Iatrogenic metal poisoning in man (Al, hemodialysis, Li, Pt, Au, etc.) (M. R. Wills, USA).
 Iatrogenic metal depletion in man (parenteral nutrition, chromium in diabetes, etc.) (K. N. Jeejeebhoy, Canada).
 Monitoring of environmental exposures in toxic metals (P. Grandjean, Denmark).
 In-vivo tests to monitor body burden of toxic metals in man (R. Lauwerys, Belgium).
 Metal protein complexes in detoxification processes (R. A. Goyer, USA).
 Computer models of metal biochemistry and metabolism (D. B. Williams, UK).

Molecular targets of metal toxicity (T. W. Clarkson, USA).
 Biotransformation processes in metal toxicity (P. Mushak, USA).
 Metal carcinogenesis, mutagenesis, and teratogenesis (F. W. Sunderman, Jr, USA).
 Nickel induced erythrocytosis in rats (G. Jasmin, Canada).
 Processing biological samples for metal analyses (M. Stoeppler, FRG).
 Control of contamination in toxic metal analysis (E. Nieboer, Canada).
 Instrumental methods for quantitation of toxic metals (Y. Thomassen, Norway).
 Electrochemical detection of toxic metals in biological materials (W. C. Purdy, Canada).
 Speciation and fractionation of toxic metals in biological materials (J. Savory, USA).
 Harmonization of toxic metal analyses in clinical laboratories (S. S. Brown, UK).

The subjects recommended for contributed papers and posters are:

Metabolism of trace metals.
 Protein-binding of trace metals, e.g. metallothionein.
 Body burdens of trace metals.
 Metal toxicology — particularly of Cd, Ni, Al, Pb, As, Hg, Cr (but not restricted to these metals).
 The role of metals in carcinogenesis, mutagenesis, or teratogenesis.
 Porphyrin or heme metabolism as related to trace metals.
 Metal deficiency diseases.
 The renal handling of trace metals.
 Analytical methods for estimating trace metals in biological materials.
 The obtaining and handling of specimens for trace metal analysis.
 Instrumentation for trace metal analysis.
 Quality control of trace metal analysis, including interlaboratory comparisons.
 Reference (normal) values for trace metals.
 Industrial toxicology of trace metals.
 Licensing and governmental control of trace metal levels.
 Any other subject related to the title of the Conference.

Registration forms should be returned to the Conference Secretariat before 15 May 1983: late registration attracts an extra fee!

6th International Symposium on Plasma Chemistry, Montreal, Canada, 24–28 July 1983

The Symposium will take place at McGill University, Montreal, and will consist of four plenary lectures and over 150 contributed papers covering a wide range of topics in both low pressure and thermal plasmas. These will include: Gaseous electronics in plasma processes; Plasma chemical synthesis; Plasma polymerization; Plasma spray-coating; ICP spec-

trochemical analysis; Modelling; Plasma melting; Diagnostics; Plasma etching; Basic plasma-surface phenomena; Plasma deposition of inorganic materials, amorphous semiconductors and metals; Transport processes; Extractive metallurgy; Technoeconomics.

Plenary lectures to be given are:

Elementary interactions between charged and neutral species in plasmas (D. Smith, UK).
 Potential, problems, and innovations of plasma heat applications in the metallurgical industry (G. K. Bhat, USA).
 Optical techniques for plasma diagnostics (T. Miller, USA).
 Basic phenomena and applications of plasma etching (G. Turban).
 Non-equilibrium plasma chemical synthesis (L. Polak, USA).

The Symposium will be preceded, on 21–23 July 1983, by a Workshop on Industrial Plasma Developments at the Université de Sherbrooke, with discussions on reactor design, safety, etching and deposition operations in plasma processing of semiconductor devices (low-pressure plasmas) and on high-power plasma generation, scale-up, plasma melting and extractive metallurgy (thermal plasmas). There will be separate registration for the Symposium and for the Workshop but in both cases registration after 15 June 1983 will attract a surcharge.

9th International Congress of Heterocyclic Chemistry, Tokyo, Japan, 21–26 August 1983

The scientific sessions will be held at the Hoshi College of Pharmacy, Tokyo; the programme will consist of plenary lectures and an award address; general sessions; symposia with invited lectures and contributed papers. All contributed papers must be submitted by 15 April 1983 and registration, hotel accommodation, etc., arranged by 15 June 1983.

The *plenary lectures* arranged are:

Chemical and biological reactions of reduced pterins (W. L. F. Armarego, Australia).
 Probing receptors with natural and synthetic alkaloids (A. Brossi, USA).
 The synthesis and properties of polycyclic aromatic thiophenes and related heterocycles occurring in coal-derived products (R. N. Castle, USA).
 Six-membered zwitterionic malonylheterocycles (T. Kappe, Austria).
 An asymmetric synthesis of α -substituted nitrogen heterocycles (A. I. Meyers, USA).
 New approaches to the synthesis of carbohydrates (T. Mukaiyama, Japan).
 Developments on the chemistry of *N*-oxides (P. Potier, France).
 New directions in heterocyclic synthesis using metalated amides (V. Snieckus, Canada).

Recent studies of antibiotics and low-molecular enzyme inhibitors (H. Umezawa, Japan).

Synthesis of unusual molecules by flash vacuum pyrolysis of heterocyclic compounds (C. Wentrup, FRG).

The general sessions will be divided into five sections which will be run in multiple parallel sessions. Contributed papers can be presented orally or by posters. The subjects to be covered are: Novel syntheses and reactions of heterocycles; Structures and physical properties of heterocycles; Chemistry of heterocyclic natural products; Chemistry of biologically active heterocycles including nucleotides, peptides and carbohydrates; Others.

Five *symposia* with invited special lectures have been planned to consider recent developments in heterocyclic chemistry. The topics and invited lectures are:

I. Organic synthesis utilizing heterocycles. Organic synthesis utilizing thiazolidine and the related heterocycles (E. Fujita); New methods and reagents for the synthesis of heterocyclic natural products (I. Ugi); New routes to macrocyclic lactones and lactams (H. H. Wasserman); Alkaloid synthesis (E. Wenkert).

II. Heterocycles with novel functions. Laser dyes and light collectors — new applications for fluorescent heterocyclic compounds (R. Raue); Macropolymeric compounds as host molecules (I. O. Sutherland); Synthesis and properties of novel porphyrins for use as oxygen-reduction catalysts (T. G. Taylor); Metal

porphyrin complexes with novel functions (Z. Yoshida).

III. Synthesis of natural heterocycles. Synthesis of bioactive natural heterocycle with polyfunctional groups (T. Goto); New tactics in heterocyclic synthesis (A. S. Kende); Imines and iminium ions in stereoselective natural product synthesis (W. N. Speckamp); Heterocyclic Diels–Alder reactions for the synthesis of natural products (S. M. Weinreb).

IV. New β -lactams and other heterocyclic antibiotics. Studies on the biosynthesis of fungal antibiotics (J. E. Baldwin); The total synthesis of some non-classical β -lactams (B. G. Christensen); Advances in stereochemical control (S. Masamune); Highly stereoselective synthesis of antitumor antibiotics, (+)-actinobolin and (–)-bactobolin, by asymmetric cyclization (M. Ohno).

V. Heterocycles in anticancer and antiviral research. Partial and total synthesis of new antitumor anthracyclines (F. Arcamone); 2'-Substituted 2'-deoxypurinenucleotides: their conformation and properties (M. Ikehara); Purines, pyrimidines, pteridines, and cancer (J. A. Montgomery); Transformation reactions in the design and development of chemotherapeutic drugs (K. A. Watanabe).

In each Symposium there will be an oral session for contributed papers.

The official language of the Congress will be English. Intending participants are reminded that at this time the weather in Tokyo is liable to be hot (21–31°C) and humid.

CURRENT PROGRAMMES 1983

The listing presents brief details of all official programmes of the International Union of Pure and Applied Chemistry (IUPAC) in operation in its special Committees and in Commissions of the Physical Chemistry, Inorganic Chemistry, Organic Chemistry, Macromolecular, Analytical Chemistry, Applied Chemistry, and Clinical Chemistry Divisions. The name of each project coordinator is given and the dates for starting and for completion or review. There are also brief comments on some of the programmes, indicating joint interests with other IUPAC bodies or a general interest in broad areas not otherwise identified, e.g. nomenclature, environment, health.

At present, a revision is scheduled every two years; this is the fifth edition, available in May 1983. It is available primarily to all Members of IUPAC bodies, National Adhering Organizations, Observer Countries, Associated Organizations, and Company Associates. Copies of *Current Programmes 1983* may be obtained from the IUPAC Secretariat. Further details of individual programmes can be obtained from the Secretary of the relevant Division or from the Secretary of the appropriate Commission or special Committee.

Full details of Membership, with addresses, of all IUPAC bodies are given in *Membership Lists of IUPAC Bodies 1981–1983* (1982 Supplement to *Chemistry International*), available from Pergamon Press.

29th IUPAC Congress

Cologne, Federal Republic of Germany

The scientific programme for the Congress was published in *Chemistry International*, 1982, No. 6, pp. 24–25. The Congress will be held in the West Congress Centre on the east bank of the river Rhine, directly opposite the cathedral. Alongside the Congress Centre is the Rhine Park with its beautiful display of flowers and trees. The Centre is a few minutes walk from the main railway station and the city centre and about 20 minutes by road from Cologne/Bonn airport.

The West Congress Centre has a large hall with a capacity of 3,200 and four other halls which can hold from 165 to 1008 people. There are a number of restaurants, the Trade Fair Tower and the Panorama having fine views of the city. In the Tower are another three conference rooms, bars, etc. The Centre is administered by the Cologne Trade Fair Company, which has an enviable reputation for smooth running to maintain; delegates should therefore have few, if any, problems. An article on the history of the city of Cologne, kindly provided by Dr. W. Fritsche, appears on pp. 15–16.

(Cover photograph courtesy of Dr. W. Fritsche.)



Hohenzollern Bridge and Cathedral, Cologne.
(Photograph courtesy of Dr. W. Fritsche.)

IUPAC PUBLICATIONS

Solubility Data Series, Vol. 9. Ethane

As is usual with this series, data compiled in this volume for the solubility of ethane in liquids represent the result of an exhaustive literature search. After an introductory chapter on the principles behind the measurement and presentation of solubility of gases in liquids, there are 251 pages of data for the solubility of ethane in water and aqueous solutions, alkanes and other non-polar solvents, alcohols and other polar solvents, various organic solvents and hydrogen sulfide. There is an index of systems, of registry numbers and of authors.

The volume, edited by W. Hayduk, is available from Pergamon Press, price US\$100.00. ISBN 0-08-026230-9.

Solubility Data Series, Vol. 10. Nitrogen and air

This volume, edited by R. Battino, is concerned with the solubility of nitrogen and air in pure liquids, liquid mixtures, aqueous and organic solutions, biological fluids and miscellaneous fluids (e.g.

petroleum fractions); high (over 200 kPa gas partial pressure) and low (up to 200 kPa) pressures are covered in separate sections. Molten salts, slags, glasses, metals and alloys are excluded. The introductory pages include tables in connection with the Sechenov salt effect parameter, and of conversion factors to SI units, as well as a general article on the solubility of gases in liquids and also thermodynamic considerations: 549 pages of data are followed by 20 pages of the three types of index included in Vol. 9.

This compilation is available from Pergamon Press, price US\$100.00. ISBN 0-08-023922-6.

New trends in chemistry teaching, Vol. 5

Although not strictly an IUPAC publication, this 270-page soft-cover volume, in English or in French, published by UNESCO, was prepared in collaboration with the IUPAC Committee on the Teaching of Chemistry. It is a selection of articles that have appeared in a variety of, mainly educational, journals and which cover a wide spectrum of topics. Section I, containing some basic chemical information, is

followed by 15 papers on 'What should we teach and how?'. The remaining Sections are headed 'Chemistry in space', 'Chemistry of the future', 'Controversies in teaching chemistry', 'Simple experiments', 'Low-cost equipment', 'Games and simulations' and 'Chemistry and industry'.

Pesticide chemistry: Human welfare and the environment

This four-volume set of books totalling about 1750 pages, make up the Proceedings of the 5th International Congress of Pesticide Chemistry, Kyoto, Japan, 29 August–4 September 1982. Over 250 papers cover all aspects of pesticide science, chemical and biological, and their impact on man and the environment. The synthesis, chemical structure and biological activities of various pesticides are discussed as are their modes of action and toxicology in the environment, both as they affect pests and other forms of life. The vital topic of residue analysis is also covered. Titles of the volumes are: 1, Synthesis and structure–activity relationships; 2, Natural products; 3, Mode of action, metabolism and toxicology; 4, Pesticide residues and formulation chemistry. The whole set, main editors J. Miyamoto and P. C. Kearney, was published by Pergamon Press in March 1983 in hard cover, price US\$448.50. ISBN 0-08-029219-4.

Chemistry and world food supplies (CHEMRAWN II)

This approximately 500-page, hard-(H) or flexible-(F) cover book is the Proceedings of the International Conference on Chemistry and World Food Supplies — The New Frontiers, held in Manila, Philippines, in December 1982. It identifies and puts into perspective those areas of research and development with the potential to increase food production significantly, and to improve food storage and processing. A report on the Conference was published in *Chemistry International*, 1983, No. 1, pp. 26–29. The book, edited by L. W. Shemilt, will be available from Pergamon Press in Spring 1983. A prepublication offer, expiring on 30 April 1983, allows prices of US\$103.50, ISBN 0-08-029245-3(H), or of US\$57.50, ISBN 0-08-029244-5(F); regular prices will be US\$138.00, ISBN 0-08-029243-7(H), or US\$80.50, ISBN 0-08-029242-9(F).

Current trends in organic synthesis

This approximately 435-page, hard-cover book is the Proceedings of the 4th International Conference on Organic Synthesis, Tokyo, Japan, August 1982. It is edited by H. Nozaki and contains the 34 plenary and invited lectures given at the Conference where the newest and interesting techniques for making antibiotics, polynucleotides, other natural products and organic compounds on both small and industrial scales were described. The book is available from Pergamon Press, price US\$90.00. ISBN 0-08-29217-8.

Safe use of solvents

Solvents are so widely used in industry, research and the home that concern has been aroused about the safety aspects of their manufacture, storage, transport, use and disposal. This book, edited by A. J. Collings and S. G. Luxon, is the Proceedings of the International Symposium on the Safe Use of

Solvents, organized by the Commission on Atmospheric Environment and held at Brighton, UK, in March 1982. Contributors from Europe and USA discussed the subject under the main headings of identification and classification, fire and explosion, toxicology, setting occupational standards for exposure to solvents and the monitoring and control of such exposure and the general environmental aspects of solvent use and disposal.

This 315-page book is available from Academic Press, price US\$37.00. ISBN 0-12-181250-2.

Recommended methods for purification of solvents and test for impurities

Non-aqueous solvents are becoming increasingly important as media for synthesis, analysis and mechanistic studies. In many applications the purity of the solvent is vitally important. The recommendations of the Commission on Electroanalytical Chemistry for the purification of the most important aprotic and amphiprotic solvents are gathered together in this volume, edited by J. F. Coetzee. While the emphasis is on critical evaluation of methods for purification and tests for impurities, the properties particularly relevant to electrochemistry are listed and information on toxic hazards associated with the use of the solvents is given. The solvents dealt with in detail are acetonitrile, sulfolane, propylene carbonate, dimethyl sulfoxide, dimethylformamide, hexamethylphosphoramide, pyridine, ethylenediamine, *N*-methylacetamide and *N*-methylpropionamide.

This 59-page, soft-cover booklet is available from Pergamon Press, price US\$20.00. ISBN 0-08-022370-2.

Ionisation constants of inorganic acids and bases in aqueous solution, 2nd edition

This book, No. 29 of the IUPAC Chemical Data Series, is an update of the tables published in 1969, by the Commission on Equilibrium Data, to the end of 1980. The data were compiled by D. D. Perrin and follow the same pattern as the similar tables for organic acids and bases. The ionisation constants have been given, in most cases, in the form of pK_a values and include those for hydrated metal ions and free radicals as well as conventional acids and bases. Although the accuracy of each entry cannot be guaranteed, an attempt has been made to select what appeared to be the best available values.

The book is available from Pergamon Press, price US\$50.00. ISBN 0-08-029214-3.

Chemical education in the seventies

This book, edited by A. Kornhauser, C.N.R. Rao and D. J. Waddington, is a collection of essays by contributors, from 40 countries, who were asked (by IUPAC–CTC) to write short reports covering the following subjects: Primary and secondary school level education; College and university level education; Training in the chemical and closely-related industries; Chemistry and society. The five-year period 1973–1977 was to be covered. There is an introductory article on 'Chemical education; Changes worldwide' and a final one on 'Chemical education — today's challenges for tomorrow's development'. The book has been reprinted by Pergamon Press at a price of US\$17.50. CTC members may purchase the book at half price and should mention their membership when placing their order. ISBN 0-08-026208-2.

Bibliography of chemical education journals

This bibliography was prepared by the Committee on Teaching of Chemistry (CTC) in collaboration with UNESCO. It contains details on over 160 journals from over 60 countries. Copies are available from the CTC Chairman, Prof. D. J. Waddington, Department of Chemistry, University of York, Heslington, York YO1 5DD, UK, price US\$5.

Guidelines for the determination of stability constants

There are now extensive tabulations of stability constants of metal complexes involving inorganic and organic ligands. In many cases, critical evaluations have been made of the data to guide the neophyte in the choice of equilibrium constants for particular applications. However, there is still a need, in many systems, to make measurements of stability constants to provide speciation data for mixed electrolyte solutions. Many workers requiring this information are not trained in the methods of stability constant determination. This article is intended as a guide for the determination of stability constants for those workers whose background is not in physical chemistry but who recognize such a need in their own systems. It is not aimed at scientists whose research interests are in the methodology of stability constant determination but rather to enable workers to decide upon the best experimental technique to be used. The determination of stability constants is described in detail from the design of the experimental methods to the final computer analysis of the data. Although the article uses relatively straightforward complex formation involving the divalent metal ion and polyvalent anion as an example, the methodology can be extended to more complicated systems both at constant ionic strength and under conditions where the concentrations are low enough to be able to estimate activity coefficient corrections.

This report by Commission V.6 was published in *Pure & Applied Chemistry*, Vol. 54, No. 12, pp. 2675–2692 (1982).

Generation of test gases for the calibration of analysis methods

Following an appraisal of already existing methods, the Commission decided to compile a paper on generation methods for gases of defined composition, which are needed for the calibration of analytical methods. A reliable and comprehensive evaluation of analytical methods without such calibration is possible in exceptional cases only. Examples from practical work show that generation and application of test gases may cause difficulties. These difficulties are often based on practical handling of apparatus or equipment. In this report, therefore, preference has been given to manipulatively simple methods, with emphasis on notes for practical application.

Test gases consist of the basic gas (e.g. air) and one or several admixtures (e.g. CO). For generating these gases two principles can be distinguished: the static method and the dynamic method. Using the static method, a measured volume of the concentrated admixture is fed to a container which is filled with the basic gas. This gas and the admixture are mixed and then yield the test gas. The principle of the dynamic method is that basic gas and admixtures flow through a mixing section. The flow rates of both gases are measured before the inlet into this mixing section, from which the test gas is delivered.

The following methods have been considered:

- Static method for mixtures up to a volume concentration of 5000 ppm (glass container);
- Static method for concentrations up to several percent by volume (plastic bags);
- Dynamic method using a glass syringe filled with the gas, the vapour, or the liquid;
- Permeation method.

In addition, consideration has been given to the determination of flow rates, and to the verifying of concentrations.

This report prepared by Commission VI.4 is expected to be published in *Pure & Applied Chemistry* in mid-1983.

Result of a critical appraisal of methods for the determination of benzene in workplace atmospheres

This paper does not give a detailed description of an analytical method but, as a result of an appraisal of existing methods, provides guidance to the analyst for selection of optimum conditions for sampling benzene in workplaces. It is also hoped that this report will contribute to more effective harmonization of air monitoring procedures, permitting the comparison of data.

The report is primarily directed at administrative and technical personnel in those countries that are becoming concerned about the air pollution aspects of an increasingly developing industrial economy. The guidance provided should also be useful to those countries that have already established a monitoring programme and are making decisions for further development of their monitoring network. Information is given on the toxicological effects of benzene (e.g. exposure, carcinogenesis, hygienic standards).

Consideration has been given to sampling of benzene by charcoal tubes and also by means of a

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glass syringe. The gas chromatographic analytical procedure is not described in detail, but the relevant literature is referred to. Detector tubes have also been considered.

This report by Commission VI.4 will be published in *Pure & Applied Chemistry* in mid-1983.

Characteristics and attributes of instruments intended for automated analysis in clinical chemistry

Instruments for automated analysis are needed in clinical chemistry to reduce manual work, increase the productivity of laboratory staff, improve the quality of results and, thereby, enhance the contribution of clinical chemistry to the improvement of patient care. Desirable characteristics of instruments intended for automated analysis in clinical chemistry are described in this report. The described attributes are most appropriate to instruments in which a biological fluid specimen such as blood, urine, cerebrospinal fluid or amniotic fluid is subjected to automated analysis. This document is not concerned with those measuring or detection instruments which are attached to a patient or with those instruments intended to process solid materials such as faeces, calculi or material taken by biopsy. Many of the terms used are defined in the Glossary.

The report is based on a model of the processes in clinical chemical analysis including information flow and material flow and includes: (a) specimen identification and presentation, (b) sampling, (c) preparation for measurement, (d) measurement and calculation, (e) accuracy and precision, (f) safety, (g) environmental protection, (h) protection of the instrument, (i) identification of instrument defects, (j) instruction manual, (k) general comments on instrument design and (l) glossary.

The report has been prepared by Commission VII.1 and will soon be printed in *Pure & Applied Chemistry*; a provisional version appeared in *IUPAC Inf. Bull.* No. 3, pp. 233–260 (1978).

A collaborative study on the relation between film blowing performance and rheological properties of two low-density and two high-density polyethylene samples

Two pairs of polyethylenes (HDPE, LDPE) were studied in 14 laboratories. The experiments concentrated on film blowing and on laboratory tests. Laboratory tests were performed on crystallization from the melt, shear viscosity (steady and time dependent), storage modulus, loss modulus, relaxa-

tion modulus, entrance pressure correction, melt flow index, extrudate swell, uniaxial extensional creep, recovery after uniaxial extension, and tensile test on extrudate. The samples were chosen so that their film blowing behavior is significantly different, but the behavior in shear flow is similar. The aim of the study is to select laboratory tests which are as sensitive to material differences as the actual film blowing process is. A correlation of such sensitive laboratory tests with film blowing will be a basis for predicting the technological behavior of commercial polymers. The two LDPE samples were polymerized in different batches. The two HDPE samples were prepared from the same powder lot and differ by the kind of processing aid (zinc or calcium stearate) which was added before granulating. The crystallization behavior was found to be different within each pair or about the same, depending on the participating laboratories; no satisfactory agreement could be achieved. The most sensitive rheological tests were found to involve extensional flow. Other sensitive rheological tests were in shear when dominated by long time constants (zero viscosity, stress relaxation). For both pairs, the sample with the lower extensional viscosity can be extended the most in the tensile test and can be blown into the thinnest film. Crystallization and extensional rheology seem to be the two most important areas in laboratory testing, as used for distinguishing between polyethylene film blowing materials.

This report by Working Party 1 (Structure and Properties of Commercial Polymers) of Commission IV.2 should be published in *Pure & Applied Chemistry* in May or June 1983.

Nomenclature of retinoids (Provisional)

Previous proposals published in the 1966 Trivial Names of Miscellaneous Compounds of Importance in Biochemistry [*Biochemical Nomenclature and Related Documents*, pp. 212–213 (1978)] included the trivial names retinol, retinal and retinoic acid. These names are retained but the numbering of the carbon skeleton is changed to conform to the 1975 Nomenclature of Carotenoids [*Pure & Appl. Chem.*, Vol. 41, No. 3, pp. 405–431 (1975); *Biochemical Nomenclature and Related Documents*, pp. 158–168 (1978)]. Methods for naming metabolites and related molecules based on the stem 'retin-' are included. Because of the previous misleading use of the word retinene as a synonym for retinal, the basic hydrocarbon also known as axerophthene is called deoxyretinol.

This provisional nomenclature report, prepared by the Joint Commission on Biochemical Nomenclature, has been published in *Pure & Applied Chemistry*, Vol. 55, No. 4, pp. 721–726 (1983). Comments should be sent to Dr. H. B. F. Dixon, Department of Biochemistry, University of Cambridge, Tennis Court Road, Cambridge CB2 1QW, UK, within eight months of the date of publication.

Recommended notation for use in the description of biological wastewater treatment processes (Provisional)

In 1980 a Working Group was set up by the International Association on Water Research & Control (IAWPRC) and the Commission on Water Quality of the International Union of Pure and Applied Chemistry (IUPAC) to prepare a proposal for unifying notation used in the description of biological wastewater treatment processes. This action was motivated by the benefits that would result from the adoption of a common system of notation in the dissemination of results in international publications.

For this purpose the Working Group reviewed journals and books within the English, French, German and American literature to establish the quantities most often symbolized and to determine the symbols most commonly used to denote these quantities. By making use of established practice and common acceptance of recognized symbols it was hoped to gain the support of authors in the adoption of a unified system of notation.

The proposals by the Working Group are the subject of this report, which will be published in *Pure & Applied Chemistry* in mid-1983. Comments should be sent to the Secretary of Commission VI.6 within eight months of the date of publication.

Supplement to definitions terminology and symbols in colloid and surface chemistry. Section 1.14. Light scattering (Provisional)

After defining key physical quantities such as elastic, inelastic, quasielastic, single, multiple, coherent and incoherent light scattering, the document deals with various elastic light scattering signals including measures of radiant intensity and polarization. This is followed by a survey of relations which deal with scattering by particles including the scattering, absorption and extinction cross sections, radiation pressure and the Rayleigh ratio. Specific expressions applicable to Rayleigh scatterers and also to small ellipsoidal particles are surveyed next. This is followed by a statement of the integral formulation of the scattering problem leading to the definition of the particle scattering factor. The final sections deal with scattering by continuous media. In solids this leads to utilization of the correlation volume. In liquids scattering is attributed to thermal density and concentration fluctuations.

This provisional nomenclature report is expected to be published in *Pure & Applied Chemistry* in mid-1983. Comments should be sent to the Secretary of Commission I.6 within eight months of the date of publication.

6th World Congress of Food Science and Technology

The International Union of Food Science and Technology are holding the 6th World Congress in the halls and grounds of the Royal Dublin Society, Dublin, Ireland, 18–23 September 1983, the organization being in the hands of the Institute of Food Science and Technology of Ireland. The Congress has as its theme 'Development–Welfare–Peace' and accordingly has as its ultimate objective the application of science and technology to human needs. The programme will embrace the most recent advances in fundamental aspects of food science and technology; new developments in the production of animal, fish, poultry and plant foods; the basic sciences; biotechnology in the food industry; process engineering and plant design; the conservation of energy; the consumers' perception of the quality of food; additives, contaminants and the safety of foods; nutritive value of traditional diets; nutrition in relation to health and disease, mental development and ageing; nutrition information and education; food and nutrition policy.

The scientific programme will consist of two plenary sessions, invited lectures, joint symposia with International Organizations on issues which concern developing countries, workshops on specialist topics and poster sessions. On the last day the IUFOST General Assembly will be held. Further

details can be obtained from IUFOST Secretariat, 44 Northumberland Road, Ballsbridge, Dublin 4, Ireland.

Euroanalysis V

The 5th European Conference on Analytical Chemistry will be held in Cracow, Poland, 26 August–1 September 1984. It will be organized by the Polish Chemical Society and the Committee for Analytical Chemistry of the Polish Academy of Sciences on behalf of the Working Party on Analytical Chemistry of the Federation of European Chemical Societies. The broad coverage planned for the Conference programme should appeal both to practising analytical chemists in industrial and control laboratories and to those teaching and doing research at universities and research institutes.

The topics of the Conference will encompass papers dealing with all classical and instrumental analytical techniques of determination and separation. Special sessions will be devoted to *Computer Based Analytical Chemistry* (COBAC III) and to *Speciation in Trace and Environmental Analysis*. The official language of the Conference will be English.

Further details may be obtained from the Secretary General of the Conference: Prof. Z. Kowalski, Academy of Mining and Metallurgy, Mickiewicza 30, 30-059 Kraków, Poland.

COLOGNE: 2000 years of history

In any discussion on the growth and development of the West, it would be hard to deny the city of Cologne an illustrious position right from the start. This claim is based on the testimony of stone, namely the many sacred and secular buildings that still stand as a reminder of the city's historical development over a period of 2000 years. When in 50 AD the Roman Emperor Claudius granted to 'Colonia' the rights of a Roman city, at the instigation of his wife Agrippina who had been born there in what was then a military camp, Cologne was already the undisputed strategic, economic and cultural headquarters of North West Europe. Its prosperity at that time was witnessed by the carefully laid out canal system, the aqueduct which led down from the heights of the Eifel, the eminent glass and ceramic industry, and a goldsmith's art that was in no way inferior to that of Rome.

Situated at the intersection of the great north-south and east-west trade routes of Europe, the city developed and retained a natural importance throughout the centuries. The Frankish kings resided here and the Emperor Charlemagne elevated the Bishopric of Cologne, which had been established in 313, to an Archbishopric. Henceforth the ecclesiastical princes of Cologne acted as advisers to the German Emperors, under whom many of them became Chancellors of the Empire and, after 1016, Chancellors of Italy. One of the most powerful was Reinald von Dassel who, in 1164 under Emperor Barbarossa, brought the relics of the Holy Magi from Milan to Cologne. They were placed among other famous holy relics associated with Cologne and from then on exerted a supernatural influence over the city, at the same time stimulating an unexpected boost in the economy. Every traveller, whether businessman or pilgrim, placed himself under their protection. The Magi eventually drew so many worshippers to Cologne that it competed with Santiago di Compostela as the foremost place of pilgrimage after Rome. The Three Kings became the patron protectors of Cologne and their crowns still embellish the city's coat of arms.

Trade and commerce flourished. The city expanded and surrounded itself with walls and fortified gates, which were never conquered. Emperors and kings found it advantageous to ally themselves with the metropolis, which in the 12th and 13th centuries was more extensive than Paris or London. The untold wealth of the city made possible the foundation of many monasteries within its broad semicircle, and the ecclesiastical princes and the citizens vied with each other in promoting and founding places of worship. So numerous were they that Cologne became known in those days as the "Rome of the North", with a magnificence that has been retained until the present day. As the crowning glory to this grandeur, the people of Cologne erected the Cathedral — a stone shrine around the golden shrine of the city patrons. The choir was finished in 1322 and its works of art were universally extolled.

The imposing town hall tower (1407–1444) and the dance and banqueting hall, the Gürzenich (1437–1444), mirror the reputation and fortune of the city council and citizens who, in 1288, had shaken off the patronage of the Archbishop. When in 1475 Emperor Friedrich III officially made Cologne a free imperial city, he was merely acknowledging the role that the city had been playing unofficially for centuries. As a prime example of a democratic citizenship, Cologne's constitution and code of law were used as a model in the founding of many cities in the north and east. The city's reputation spread far and wide, and its trade relations extended from Sicily across Spain, Flanders and England, as far as Novgorod. Eventually Cologne became a leading member of the Hanseatic League, that powerful medieval association of cities and commercial interests. It was here in the town hall that the League met in 1367 to declare war on the King of Denmark, who controlled the North Sea and the Baltic; the outcome was a thorough defeat for the Dane.

Not only the economic but also the spiritual side of life flourished during these centuries. In 1248 Albertus Magnus had founded the Studium Generale; Thomas Aquinas was his pupil. Master Ekkehard, the mystic, lived and taught here, as did the learned Scottish monk Duns Scotus. In 1388 Cologne University, modeled along the lines of that in Paris, was granted its charter by Pope Urban VI, thus becoming the first civic university in Germany.

Following the discovery of America, Cologne, as an inland city, suffered a temporary reversal of its fortunes, a fate shared by many other once-important cities in Europe. Nevertheless, in 1553 Germany's first stock exchange was established here, one of the five oldest in Europe. With the coming of industrialization at the end of the 18th and beginning of the 19th centuries, the city bounced right back into prominence. The rapid development of navigation on the Rhine and the construction of the railways in western Europe, which followed the old natural routes, quickly turned Cologne into the leading business and communications centre on the Rhine. In 1797 the city's businessmen founded Germany's first Chamber of Commerce. World-famous industries developed, e.g. cables, engines and railway carriages; chemicals, lignite and electrical energy; Eau de Cologne and confectionery. Industry and trade stimulated the financial market and Cologne became the foremost banking and insurance centre in western Germany.

After the First World War the economic and intellectual emphasis of the Rhineland focused even more strongly on Cologne. New industries joined the old, in particular the giant factories associated with manufacture of cars and artificial textile fibres. The cultural life of the city, much enriched since the middle of the 19th century thanks to the donations of the citizens, was given a splendid boost by the re-establishment of the university. The schools of art — today the Fachhochschule für Kunst und Design

(College of Art and Design) — inspired by the Werkbund Exhibition of 1914, were outstripping some of Europe's other art academies. The Conservatory became the College of Music and between the two world wars Cologne had the liveliest concerts and theatre productions in the Rhineland. It also ranked highly as a city of museums and galleries.

From the devastating destruction of the last war the city rose again like the phoenix from the ashes. Today its population numbers one million. The banking and insurance market, with its multiple interconnections, is concentrated more strongly than ever around the Chambers of Industry and Commerce, and the Cologne Trade Fair is the leading international trade and exhibition centre on the Rhine. The city is a vast redistribution point for goods of every kind and acts as a supply centre for six million people within a radius of up to 200 km. Industry, in its many facets, has caught up with, and outstripped, its former capacity, while new fields of business activity have also established themselves here. With

the highest concentration of railway traffic in the Federal Republic, Cologne's central station has become the junction of the continent; on the roads, the density of traffic prompted the rapid reconstruction of the bridges at Deutz, Mülheim and Rodenkirchen, winning for Cologne the epithet "city of the beautiful bridges". Together with the Hohenzollern Bridge and Südbrücke, which carry exclusively railway traffic, St. Severin's Bridge, which is an interesting suspension bridge with a single 80-m high A-shaped pylon standing off-centre towards the Deutz side of the river, the Leverkusen motorway bridge and the Zoobrücke, which was completed in 1966, Cologne has eight Rhine crossings. Since the airport at Wahn has been improved to cater for international jet flights and connected to the international air traffic network, Cologne can truly be called the "crossroads of the West".

Once again the city of Cologne is fulfilling its traditional function, as a bridge between West and Central Europe.

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

Commission II.2 — Nomenclature of Inorganic Chemistry: Paris, France, 28 August–1 September 1982

1. Current program of the Commission

The Commission's current program includes two areas of activity to revise, update, and extend inorganic nomenclature rules. First, the existing Red Book is undergoing thoroughgoing revision with a view to rapid publication of a volume (designated as Part I of the Inorganic Nomenclature Rules) which will summarize basic aspects of inorganic nomenclature. Second, the Commission is continuing to prepare a series of detailed documents on specialized nomenclature subjects, collectively designated as Part II. Substantial progress was made in both areas at the Paris meeting.

2. Status of the revised Red Book (Part I)

Detailed formats and editorial standards for the Part I revision were agreed upon by the Commission. New drafts of eight of the ten chapters planned for the Part I volume were presented. Four of the chapters are essentially completed, apart from final editing. These are: Chapter 1.1. Aims, Functions and Methods of Nomenclature; Chapter 1.3. Elements, Atoms, and Groups of Atoms; Chapter 1.4. Formulae; Chapter 1.8. Ions, Radicals, and Salts. Five are sufficiently far advanced that their essential completion is expected by the 1983 meeting. It was decided to expand the volume by inclusion of a

separate chapter on boron nomenclature which will update the material in the 1970 rules, and a working party was constituted to prepare a suitable draft. Another working party was established to review the treatment of organometallic compounds in the revised Red Book.

3. Other activities (Part II)

Recommendations for *Nomenclature of Isotopically Modified Compounds* (the first completed chapter in Part II of the revised inorganic rules) were published in late 1981. A joint (with the Commission on Macromolecular Nomenclature) document on *Nomenclature for Regular Single-Strand and Quasi-Single-Strand Inorganic and Coordination Polymers* was published in provisional form in November 1981. The final version of rules for *Nomenclature of Hydrides of Nitrogen and Derived Cations, Anions, and Ligands* has been submitted for publication. A document on *Nomenclature of Polyanions* has received final approval by the Commission and will be submitted in the near future. These documents are typical of the detailed specialized treatments of individual areas of nomenclature that are envisaged for the continuing Part II projects of the Commission.

4. Nomenclature of solid state chemistry

A joint working group on solid state nomenclature has been formed by Commissions II.2 and II.3. The Commission has given this activity high priority in recognition of urgent needs for nomenclature standardization in the inorganic chemistry and materials

science communities. The working group is expected to prepare a draft chapter suitable for Part I by the time of the 1983 meeting.

5. Next meeting

The next meeting of the Commission will be held in Lyngby, Denmark, from 11 to 16 August 1983.

T. D. Coyle

Commission II.3 — High Temperature and Solid State Chemistry: Karlsruhe, FRG, 1–2 October 1982

Publications

Since Leuven, one paper on the melting points of oxides has been published in *Pure & Applied Chemistry* (PAC). The Bibliography has been published on schedule. Three other papers should be submitted to PAC before Lyngby. A new chapter of the Red Book should be ready before Lyngby.

A list of publications of the Commission is included in the Extended Minutes.

Melting points of refractory oxides (Hlavac)

(1) Part I has been published in PAC Vol. 54, No. 3, pp. 681–688 (1982). Errors appear in the abstract; values in the conclusion are correct. (2) Part II, on the lanthanide oxides, now in its third draft, is being revised, and this task should be ready for final consideration at Lyngby. (3) Seven laboratories are participating in collaborative melting point measurements on CaO , Gd_2O_3 and HfO_2 , whose values were shown in Part I to be less certain than desirable.

Carbide-carbon secondary temperature standards (Komarek)

Samples of NbC-C , $\text{W-W}_2\text{C}$, $\text{MoC}_2\text{-C}$ for eutectic temperature measurements and Mo_2C for a transition temperature measurement are being prepared and should be shipped within two months to laboratories participating in the collaborative measurements. The Collaborative Study Group has been converted into a Task Force, and a Subcommittee has been proposed.

Solid state electrolytes (Anthony and Corish)

Results of collaborative measurements in ten laboratories on zirconia-based electrolytes from five commercial producers of tubes have been received. A manuscript is being circulated among the participants. It should be ready for submission to PAC before Lyngby. Under consideration is an extension into lower oxygen potential regions.

Handbook on Thermodynamic and Transport Properties of the Alkali Metals (Ohse)

This monumental work of some 1400–1500 pages in two volumes consists of 56 chapters. Thirty-two have been received in first draft, with others due in December. It is hoped that final drafts will be in the editor's hands by Lyngby so that publication by Pergamon Press can proceed promptly.

Characterization and terminology of carbon (Fitzer)
The definitions of about thirty terms have been prepared by the Subcommittee and are being publicized so that interested scientists and engineers can comment. After the comments have been considered, a publication will be prepared for PAC; it is hoped to submit it before Lyngby. Two other lists of about the same length are in earliest stages of development, and will similarly be considered.

The Bibliography on the High Temperature Chemistry and Physics of Materials (Hocking)

The schedule has been maintained. The number of subscriptions has declined, and the price has been raised. A small computer is now available for use by the Bibliography. Discussions have been held with the editor of the *Bulletin of Chemical Thermodynamics* relative to possible inclusion of a large fraction of the Bibliography contents in the Bulletin.

Conferences with IUPAC sponsorship

The Chemistry of Materials at High Temperatures was the title of a Conference, the third in a series, held at Harwell, UK, 7–10 September 1981. Approximately 110 people attended. *Zirconia-83* is scheduled for Stuttgart, FRG, 21–23 June 1983. Plans are being discussed for the *Fourth International Conference on Energy and Materials at High Temperatures* to be held in Santa Fe, New Mexico, USA in 1984.

Thermionic properties of refractory materials and Lithium compounds and alloys

Both these preliminary surveys were discontinued.

Nomenclature of non-stoichiometric compounds (Metselaar and Corish)

A revised chapter of the Red Book, Chapter 9 *Crystalline Phases of Variable Composition*, should be ready for Lyngby. This chapter is the result of a joint working party with Commission II.2. A more extensive work is under discussion.

New projects

High Temperature Mass Spectrometry Ionization Cross Sections Critical Assessment (Drowart), Silicon Nitride and Silicon Carbide (Petzow and Ser-sale), and Reference Electrodes for Solid State EMF Studies (Rand) were all commissioned.

IUPAC Thermochemical data bank (Alcock)

Suggestions were made regarding the most appropriate format for publication in the Bibliography. Data on the elements are now available.

Appendix IV to the Green Book (Gilles and Rosenblatt)

A strongly worded protest against the definition of the Standard State Pressure as 10^5 Pa, as reported in PAC, Vol. 54, No. 6, pp. 1239–1250 (1982), was approved and is being sent to the Division, the Secretariat, Commission I.2, and PAC.

Elections

National Representatives Baumard (France) and DeMaria (Italy) were accepted.

Next meeting

The next meeting will be held in Lyngby, Denmark, 19–22 August 1983.

P. W. Gilles

Commission III.1 — Nomenclature of Organic Chemistry: Heidelberg, FRG, 24–30 August 1982

1. Nomenclature of Organic Chemistry, Section D, 1979 Edition

The Commission reaffirmed its previous decision that Section D should become fully approved recommendations and urged Commission II.2 to agree to this to facilitate the use of material from the section by each Commission.

2. Revision of the Hantzsch–Widman systems for heteromonocycles

Revision of the provisional recommendations previously published have been fully approved for publication as soon as possible.

3. Revision of the 1979 edition of the Nomenclature of Organic Chemistry

This revision, which is primarily a reorganization of the current rules but with simplifications where possible and additions or extensions, or both, where necessary, is receiving much attention. The proposed outline for this revision was published in the synopsis minutes of the Commission's 1981 meeting in Leuven (*Chemistry International* Supplement, 1982). Revised drafts of subsections R-1, R-2, and R-3 were reviewed and a preliminary draft of R-7 studied. A meeting of the working party is scheduled for March 1983, in London.

4. Treatment of variable valence in organic nomenclature (the λ -convention)

Comments on the provisional recommendations published in PAC, Vol. 54, No. 1, pp. 217–227 (1982) were reviewed and modifications to be included in a revised publication approved.

5. Cyclophane nomenclature

A system for naming this class of compounds has been developed that uses the numbering principles developed for nodal nomenclature. Provisional recommendations for naming cyclophanes were approved by the Commission but will await completion of a companion document describing nodal numbering principles before publication of both documents together.

6. Numerical terms

Principles for extending numerical terms used in organic nomenclature beyond 199 were approved by the Commission for publication as provisional rules.

7. Early drafts of *Cumulative Double Bonds in Organic Ring Systems* and *Mononuclear Parent Hydrides* were reviewed.

8. Other documents and subjects considered primarily in meetings of various working groups included: Revised nomenclature for radicals and ions; Revision and extension of *Section E (Stereochemistry)* and *Section F (Natural Products)*; Indicated hydrogen; Fusion nomenclature; Delocalized ions; Class names; and Oxo acid nomenclature.

9. Membership

Dr. A. J. Boulton (UK) was nominated as an Associate Member and Prof. J. R. Cannon (Australia) and Prof. W.-y. Huang (Chinese

Chemical Society) were confirmed as National Representatives.

10. Next meeting

The next meeting of Commission III.1 will be in Lyngby, Denmark, 14–20 August 1983.

W. H. Powell

Commission III.2 — Physical Organic Chemistry: Louvain-la-Neuve, Belgium, 17–19 July 1982

The Commission met under the chairmanship of Prof. Joseph Bunnett immediately after the biennial IUPAC Conference on Physical Organic Chemistry. There are at present three main themes in the activities. Many topics are at an advanced state of development, and much time was devoted to discussion of points of detail, paving the way for publication in one or two years' time.

1. A provisional version of the *Glossary of terms used in physical organic chemistry* has been published.¹ We approved further additions and amendments to be incorporated into the definitive version, which Prof. Victor Gold is now preparing for publication.

A joint working party of Commissions III.1 and III.2 is producing a glossary of stereochemical terms and Commission III.2 is working on a photochemical glossary; it may be possible in the future to amalgamate the three documents.

2. We have been developing a system for naming organic transformations.^{2,3} (The term 'transformation', as distinct from 'reaction', is used to describe changes to a particular substrate: thus the single transformation $\text{RCONH}_2 \rightarrow \text{RCOOH}$ may be accomplished by a number of different reactions, e.g. with HONO or with $\text{H}_2\text{SO}_4/\text{H}_2\text{O}$.)

Provisional rules for simple substitutions, additions and eliminations have been published,² and are being modified and extended. Working parties have been developing rules for multivalent transformations (e.g. $\text{RCHO} \rightarrow \text{RCH}=\text{NAr}$ is an arylimino-de-oxo-bisubstitution), for attachments and detachments, insertions and extrusions, ring openings and closings, and for a range of symmetrical 'coupling' transformations in which it is inconvenient to define one entity arbitrarily as substrate (e.g. in the reductive dimerization of propanone to pinacol). We reviewed activities in all these areas and initiated the preparation of a definitive set of rules to include initially at least the simple and multivalent substitutions, additions and eliminations, and the attachments and detachments. A feasibility study had been carried out during the previous year into the nomenclature of rearrangement transformations, and we decided to go ahead with defining rules in this area too.

3. We have been developing two separate but related systems for representing the mechanisms of organic

reactions.³ One is intended to provide a way of representing all the essential components of a reaction mechanism by a linear string of symbols that would be intelligible both to the chemist and the computer. Dr John Littler has described an early version of the scheme.⁴ In essence the mechanism is first broken down into a series of Elementary Reactions which can in turn be described in terms of Primitive Changes that can be represented by mnemonic symbols. Thus the sequence:



would be represented as:



meaning "rate-limiting (#) bond-formation (Association) from nucleophilic S to C concerted with pi-bond-breaking (Dissociation) between C and O with the electrons moving to O, and followed by bond-formation from the nucleophilic O to H⁺".

The second system, developed by Prof. Robert Guthrie,⁵ is designed to replace the obsolescent Hughes-Ingold symbolism (S_N2, E1cB, etc.) with a simple, descriptive and rational system based on the A and D symbols for bond making and breaking together with the conventional subscripts N, E and R (and possibly also H for proton transfer) to describe the pattern of electron movement. The formation of the hemithioacetal described in full above would, in the simple system, be A_N + A_E.

The development of both systems is now reaching an advanced stage. Our main concern at the meeting was to coordinate them so that as far as possible the simple system is an abbreviation of the full one.

The meeting also considered the desirability of a third system, proposed by Prof. William Jencks, that would provide a description of the properties of a reaction without mechanistic implications. It could be closely related to the Hughes-Ingold conventions, with symbols to describe the nature of the transformation (substitution, addition, etc.), the nature of the bonds made or broken (alkyl, aryl, acyl, etc.), the observed kinetic order (with an extra symbol for solvent participation), and the observed catalytic behaviour. For example, the specific base-catalysed formation of a hemithioacetal would be AdAc₂,OH. The meeting decided that these proposals were useful and merited further investigation.

In conclusion the Commission expressed its gratitude to Prof. Paul van Brandt of the Catholic University of Louvain for his help and hospitality during our meetings.

References

1. Glossary of terms used in physical organic chemistry, prepared for publication by V. Gold, *Pure & Appl. Chem.*, **51**, 1725-1801 (1979).
2. Nomenclature for straightforward transformations, prepared for publication by J. F. Bunnett, *Pure & Appl. Chem.*, **53**, 305-321 (1981).
3. J. F. Bunnett, *Chem. Int.*, 1981, No. 2, 24.
4. J. S. Littler, *J. Org. Chem.*, **44**, 4657 (1979).
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Richard A. Y. Jones

Commission V.2 — Microchemical Techniques and Trace Analysis:

Dortmund, FRG, 10-11 September 1982

Members present stood in silence, in memory of Prof. R. Belcher.

1. Dr. O. H. Christie had resigned.

2. Reports completed

(a) *General Aspects of Trace Analytical Methods*. V. *Practical Limits of Determination of Trace Analytical Methods* (Koch, Morrison, La Fleur) had been published in PAC, Vol. 54, No. 8, pp. 1565-1577 (1982).

(b) *Recommendations Concerning In-Situ Microanalysis* (Grasserbauer, Adams, Ilyin, Morrison and Heinrich). Some problems of acronyms remained to be solved.

(c) *Separation and Preconcentration of Trace Substances — II. Multielement Preconcentration by Precipitation of the Matrix* (Jackwerth, Townshend). A revised version was being typed for submission to the Division Committee.

(d) *Separation and Preconcentration of Trace Substances — III. Flotation as a Preconcentration Technique* (Mizuike, Hiraide) had been published in PAC, Vol. 54, No. 8, pp. 1555-1563 (1982).

(e) *General Aspects of Trace Analytical Methods — VI. Acid Pressure Decomposition in Trace Element Analysis* (Gomiscek, Jackwerth). A revised report was available.

(f) *Critical Evaluation of Analytical Methods for the Determination of Trace Elements in Various Matrices*. I. *Selenium in Biological Materials and Water* (Campbell). This was ready for submission to the Division Committee.

3. Current projects

(a) *Critical Evaluation of Analytical Methods for the Determination of Trace Elements in Various Matrices*: II. *Cobalt* (Townshend); III. *Molybdenum* (Marczenko); IV. *Chromium* (Ottaway); *Thallium* (Tölg); VI. *Nickel* (Townshend) would be completed by August 1983. VII. *Trace Analysis of Semiconductors* (Grasserbauer, Adams, Morrison, Zolotov); VIII. *Manganese* (Ottaway); IX. *Fluorine* (Campbell) would appear as first drafts at the same time.

(b) *Instrumental Methods of Organic Elemental Analysis* (Griepink, Lamotte, Terent'eva).

(c) *Parameters of Interest for Standards In-situ Microanalysis* (Heinrich, Ilyin, Grasserbauer, Tölg). Both would be reported in August 1983.

(d) *Determination of Trace Elements in Natural Waters* (Division Project, Griepink). Two reports were presented: *Some General Considerations Concerning Accuracy and Precision in Trace Metal Analysis in Water*, and *Investigation of Methods and Sources of Error in Trace Element Analysis in Surface Waters using the Determination of Chromium and Mercury as Examples*. These reports were considered to be very important, and would be transmitted to the Division Committee.

(e) *Methodology of Trace Organic Analysis*. I. *A Preliminary Survey* (Lamotte, Beyermann, Fuwa, Westmoreland). This report concentrated on sample collection, transfer and storage. The strategy for

tackling the very large field of trace organic analysis was discussed, and a further report would be presented. Overlap with other IUPAC Commissions should be avoided.

A. Townshend

Commission VII.2 — Quantities and Units: Brussels, Belgium, 8–10 November 1982

1. Commission documents reviewed

(a) *Quantities and Units in Clinical Chemistry: Molecular and Atomic Emission and Adsorption Spectroscopy in Physico-Chemical Plasmas*

The document has been submitted to the Clinical Chemistry Division for approval. Based on comments received the document was re-examined and further revisions made to provide a more logical approach to the topic and make it a more 'free standing' document (compared to one of a series as originally proposed). As a result, it is proposed to retitle the document *Quantities and Units in Clinical Chemistry: Nebulizer and Flame Properties in Flame Emission and Absorption Spectrometry*. The revised document will be resubmitted for Division approval early in 1983.

(b) *Quantities and Units in Clinical Chemistry: Provisional Recommendation on the Unit 'One'*

The document, under revision following distribution for comment, was discussed. An extensively revised document will be submitted for approval as a Recommendation in 1983.

(c) *Physico-Chemical Quantities and Units in Clinical Chemistry with Special Emphasis on Activities and Activity Coefficients*

The document that has been under revision following publication (in 1981) as a Provisional IUPAC Recommendation was discussed. It is hoped to resolve outstanding discussion points and submit the document for approval as an IUPAC Recommendation during 1983.

(d) *Nomenclature of Derived Quantities*

The document, revised on the basis of comments received, was reviewed. A draft, based on comments and discussions, will be prepared for submission for approval as a Provisional Recommendation during 1983.

(e) *Quantities and Units Related to Change in Properties with Time*

A draft document was examined and the format of a Provisional Recommendation, including a list of quantities to be included, was discussed. This document and related topics will be given priority for Commission activities during 1983.

(f) *Quantities and Units in Clinical Chemistry: Definitions, Symbols, Quantities and Units in Optical Spectroscopy*

A draft document, prepared by members of Commission I.5 and received shortly before the meeting, was discussed. Some general observations on the document were made and detailed comments will be for-

warded to Commission I.5 for incorporation into a joint Commission I.5 and VII.2 Provisional Recommendation.

2. Other documents

(a) An IFCC draft document *Classification of In-vitro Protein Binding Assays and Glossary of Terms* (prepared by the IFCC Expert Panel on Immunoassays) has been reviewed and discussed. A proposal will be submitted to the Clinical Chemistry Division that this be approved as a IUPAC project also and, if approved, a joint IUPAC-IFCC recommendation will be prepared.

(b) The Commission V.5 draft document *Definition of pH Scales, Standard Reference Values, Measurement of pH and Related Technology* was discussed. Comments on the document will be forwarded to the principal author.

3. Future meetings

(a) Maastricht, The Netherlands, 21–23 March 1983 (IFCC-EPQU).

(b) Lyngby, Denmark, 19–22 August 1983 (IUPAC-CQUCC).

H. P. Lehman

Commission VII.4 — Toxicology

(a) **Subcommittee on Environmental and Occupational Toxicology of Cadmium:**
Luxembourg, 8 July 1982

Membership lists

Dr. Stoeppler proposed that our extensive membership lists be divided into two types of members: (a) Active, those who actually participate in experimental studies and (b) Corresponding members. Dr. Stoeppler said he would send out a list of our members within five weeks and each person should then indicate to him which classification was preferred. Approved.

Publication of details of 1st and 2nd round-robin studies

It was hoped that a paper would be ready for publication in PAC by the end of this year. Some additional information about the handling of high-valued samples was required. The first draft would be sent to all participants for approval and comments should be returned to Dr. Stoeppler by 15 September 1982 at the latest. Approved.

New method for collaborative testing

A slight modification of the method of Stoeppler and Brandt had been devised and is ready for testing as a working method. Certain selected laboratories had agreed to test the technique. Samples would be sent out about 1 September with results to be returned by 1 November. Dr. Brown asked that details of the chemicals used be also reported. If the results were good, the procedure could be proposed as a reference method. Approved.

Next round-robin series

Dr. Stoeppler suggested that our interlaboratory

comparisons should proceed with studies of *cadmium in urine*, to start about February 1983. Data should then be presented at the Montreal meeting. Details for the studies would be worked out later. Samples of Behringwerke material in comparison to native urine samples could be used. There was a discussion concerning the stability of aqueous solutions (Cd in dilute HNO₃) after Dr. S. Brown suggested that such samples be included. Approved.

Other possible activities

There was a discussion concerning the feasibility of round-robin series featuring β -2 microglobulin (β -2 MG) or *retinol-binding protein* (RBP), or both. The use of β -2 MG as a test was complicated by its instability at a pH < 5.5 (can decompose in the bladder). Dr. Vesterberg was interested in proceeding with studies of β -2 MG. Dr. Brown thought it was too early to work with RBP because no standards were available. Dr. Berlin suggested that a few laboratories (8) conduct a feasibility study with RBP; for this money could be provided by CEC. Approved.

Lead

Dr. M. Bomans suggested that a Subcommittee on lead be established in Commission VII.4. He gave as the reason the need to recommend standards because of the large number of privately-owned laboratories which were performing this test. Dr. Tonks wondered whether the Cadmium Subcommittee could also work with lead. Dr. Brown stated that the Stoeppler and Brandt method for cadmium also worked well for lead. Dr. Tonks suggested that it would be efficient to combine lead and cadmium studies. Dr. Brown suggested that unofficial studies be begun to provide reference materials. Dr. Berlin stated that results of CEC studies on lead should be available for presentation at Montreal and perhaps any decision should be based on these results. It was decided that this was appropriate.

Future meetings

4th International Cadmium Conference, Munich, FRG, 1–4 March 1983.

2nd International Conference on the Clinical Chemistry and Clinical Toxicology of Metals, Montreal, Canada, 19–23 July 1983.

32nd IUPAC General Assembly, Lyngby, Denmark, 18–26 August 1982.

4th International Conference, 'Heavy Metals' in the Environment, Heidelberg, FRG, 6–9 September 1983.

It was hoped that as many of those present as possible could attend the above meetings, and particularly the Montreal Conference. Dr. Tonks made a plea for attendance and participation at Montreal.

M. Stoeppler

(b) **Subcommittee on Environmental and Occupational Toxicology of Nickel:** Dublin, Ireland, 10–11 June 1982

Publications

The *IUPAC Reference Method for Analysis of Nickel in Serum and Urine by Electrothermal Atomic Absorption Spectrometry*, originally published in PAC, Vol. 53, No. 3, pp. 773–781 (1981), has been reprinted in *Clin. Biochem.*, Vol. 14, pp. 295–199 (1981). The report on *Interlaboratory Evaluations of Nickel and Cadmium in Body Fluids* has been published in *IUPAC Collaborative Interlaboratory Studies in Chemical Analysis* (H. Egan and T. S. West, eds., Pergamon Press, Oxford, 1982, pp. 25–35).

Conferences and symposia

The third IUPAC International Conference on Nickel-Toxicology will be held in Paris, France, on 4–7 September 1984. The host for the Conference is Société Métallurgique Le Nickel, and the Conference Co-chairmen are F. W. Sunderman, Jr. and C. Bozec.

Projects

The Nickel Subcommittee reviewed progress on the five projects that are underway: (a) development of a reference method for analysis of nickel in whole blood and tissues by electrothermal atomic absorption spectrophotometry (F. W. Sunderman, Jr., coordinator); (b) cooperative evaluation of reference matrix materials for nickel analysis in body fluids (M. Stoeppler and S. S. Brown, coordinators); (c) collaborative interlaboratory surveys of nickel analyses in body fluids to monitor occupational exposures to toxic nickel compounds (S. S. Brown, coordinator); (d) development of recommendations on collection, storage, and shipping of body fluids for nickel analysis (E. Nieboer, coordinator); and (e) drafting a document on autoradiographic detection of radiolabeled nickel in biological materials (A. Oskarsson, coordinator). The completion date for project (a) was extended to 1985 and that of (c) to 1984. The remainder should be completed by the target dates specified in the 1982 IUPAC Roster of Projects. One new project was approved: a task force on the *Classification and Nomenclature of Nickel-Binding Macromolecular Constituents in Tissues* (F. W. Sunderman, Jr. and B. Sarkar, coordinators).

Subcommittee chairmanship

Dr. F. W. Sunderman, Jr. wished to relinquish the chair, which he had occupied for eight years since the inception of the Subcommittee. On behalf of the Nickel Subcommittee, Dr. L. Morgan formally thanked Dr. Sunderman for his dynamic leadership and diligent service. Dr. E. Nieboer agreed to serve as the new Chairman.

Future meetings

The Nickel Subcommittee has scheduled the following meetings: (a) Special Meeting, Montreal, Canada, 18 July 1983; (b) Annual Meeting, Lyngby, Denmark, 20–22 August 1983; and (c) 1984 Annual Meeting, Paris, France, 3 September 1984.

E. Nieboer

IUPAC CONFERENCES

Additional information from address in parentheses

1983

IUPAC CONGRESS

June 4 - 12. 29th International Congress of Pure & Applied Chemistry. Cologne, Federal Republic of Germany.

(General Secretariat of the 29th IUPAC Congress, Dr. W. Fritsche, c/o Gesellschaft Deutscher Chemiker, P.O. Box 900440, D-6000 Frankfurt/M 90, Federal Republic of Germany.)

BIOINORGANIC CHEMISTRY

June 13 - 17. 1st International Conference on Bioinorganic Chemistry. Florence, Italy.

(Prof. A. Scozzafava, Istituto di Chimica Generale, Facoltà di Farmacia, Via G. Capponi 7, 50121 Florence, Italy.)

ZIRCONIA TECHNOLOGY

June 21 - 23. 2nd International Conference in the Science and Technology of Zirconia (ZIRCONIA-83). Stuttgart, Federal Republic of Germany.

(Nils Claussen, Max-Planck-Institut für Metallforschung, Institut für Werkstoffwissenschaften, Heisenberstraße 5, D-700 Stuttgart 80, Federal Republic of Germany.)

SPECTROSCOPY

June 26 - July 1. 23rd Colloquium Spectroscopicum Internationale. Amsterdam, The Netherlands.

(23rd CSI, c/o Organisatie Bureau Amsterdam BV, Europaplein, 1078 GZ Amsterdam, The Netherlands.)

PROPERTIES OF COPOLYMERS

July 11 - 14. 24th Prague Microsymposium: Copolymers, Structure and Solution Properties. Prague, Czechoslovakia.

(Dr. P. Kratochvíl, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

BORON CHEMISTRY

July 11 - 15. Imeboron V (Organic and Inorganic). Swansea, Wales, UK.

(Prof. A. Pelter, Department of Chemistry, University College of Swansea, Singleton Park, Swansea, West Glamorgan SA2 8PP, UK.)

ANALYTICAL CHEMISTRY

July 17 - 23. SAC 83 Conference and Exhibition. Organized by the Analytical Division of the Royal Society of Chemistry, University of Edinburgh, Edinburgh, UK.

(Dr. J. M. Ottaway, Department of Pure & Applied Chemistry, University of Strathclyde, Cathedral Street, Glasgow G1 1X1, UK.)

POLYMER STABILITY & PROCESSING

July 18 - 21. 25th Prague Microsymposium: Processing and Long-Term Stabilities of Hydrocarbon Polymers. Prague, Czechoslovakia.

(Dr. J. Pospíšil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

TOXICOLOGY OF METALS

July 20 - 23. 2nd International Symposium on Clinical Chemistry and Chemical Toxicology of Metals. Montreal, Canada.

(Dr. J. Savory, University of Virginia Medical Center, Department of Pathology, Box 168, Clinical Laboratories, Charlottesville, VA 22908, USA.)

PLASMA CHEMISTRY

July 24 - 28. 6th International Symposium on Plasma Chemistry. Montreal, Canada.

(Prof. M. Boulos, Département de génie chimique, Faculté des sciences appliquées, Université de Sherbrooke, Sherbrooke, Québec, Canada J1K 2R1.)

IUPAC GENERAL ASSEMBLY

August 18 - 26. 32nd IUPAC General Assembly. Lyngby/Copenhagen, Denmark.

CHEMICAL EDUCATION

August 21 - 26. 7th International Conference on Chemical Education "Chemistry Education and Society". Montpellier, France.

(Prof. M. Chastrette, Laboratoire de Chimie Organique Physique, Université Lyon I, 43, Bld du 11 Novembre 1918, 6922 - Villeurbanne, France.)

HETEROCYCLIC CHEMISTRY

August 21 - 26. 9th International Congress of Heterocyclic Chemistry. Tokyo, Japan.

(Yuichi Kanaoka, Faculty of Pharmaceutical Sciences, Hokkaido University Sapporo, 060 Japan.)

ORGANOMETALLIC CHEMISTRY

August 28 - September 1. 2nd IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis. Dijon, France.

(Prof. J. Tirouflet, Université de Dijon, Boite Postale 138, 21004 Dijon Cedex, France.)

MICROCHEMICAL TECHNIQUES

August 28 - September 2. ISM '83, 9th International Symposium on Microchemical Techniques. Amsterdam, The Netherlands.

(Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam, The Netherlands.)

CATIONIC POLYMERIZATION

August 30 - September 2. 6th International Symposium on Cationic Polymerization and Related Processes. Belgium.

(Prof. E. Goethals, Institute of Organic Chemistry, Rijksuniversiteit-Gent, Krijgslaan 281 (S-4) B-9000 Ghent, Belgium.)

FOURIER TRANSFORM SPECTROSCOPY

September 5 - 9. International Conference on Fourier Transform Spectroscopy. Durham, UK.

(J.R. Birch, Division of Electrical Science, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK.)

MACROMOLECULES

September 5 - 9. 29th International Symposium on Macromolecules. Bucharest, Romania.

(Acad. Cristofor Simionescu, Institutul de Chimie Macromoleculară Petru Poni Aleea Grigore Ghica Vodă Nr. 41A, Iași, Romania.)

PHOSPHORUS CHEMISTRY

September 5 - 9. International Conference on Phosphorus Chemistry. Nice, France.

(Prof. J. G. Riess, Laboratoire de Chimie Minérale Moléculaire, Université de Nice, Parc Valrose, 06034 Nice, France.)

CRYSTAL GROWTH

September 12 - 16. 7th International Conference on Crystal Growth, ICCG-7. Stuttgart, FRG.

(Prof. Dr. M. Pilkuhn, Universität Stuttgart, Pfaffenwaldring 57, 7000 Stuttgart 80, FRG.)

MOSSBAUER EFFECT

September 26 - 30. International Conference on Applications of the Mossbauer Effect. Alma Ata, USSR.

(Prof. V. I. Goldanskii, Institute of Chemical Physics, Academy of Sciences of the USSR, Kosygin Street 4, Moscow 117977 SZD 1, USSR.)

ORGANOMETALLIC CHEMISTRY

October 10 - 14. 11th International Conference on Organometallic Chemistry. Pine Mountain, GA, USA.

(Dr. E. C. Ashby, School of Chemistry, Georgia Institute of Technology, Atlanta, GA 30332, USA.)

1984

BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.

(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.

(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.

(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

MEDICAL POLYMERS

July 9-12. 26th Prague Microsymposium, Medical Polymers. Prague, Czechoslovakia.

(Dr. P. Cefelin, Scientific Secretary, PMM Secretariat, Institute of Macromolecular Chemistry, 1888 Petriny, Prague 6, Czechoslovakia.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.

(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

RAMAN SPECTROSCOPY

August 26-September 1. 9th International Conference on Raman Spectroscopy. Tokyo, Japan.

(Prof. Mitsuo Tasumi, Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.)

ORGANIC CHEMISTRY

August. 7th IUPAC Conference on Physical Organic Chemistry. Auckland, New Zealand.

(Prof. B. R. Davis, Chemistry Department, University of Auckland, Private Bag, Auckland, New Zealand.)

1985

POLYMER ANALYSIS

February 11-14. POLYMER 85: Characterization and Analysis of Polymers. Melbourne, Australia.

(Dr. J. H. O'Donnell, Polymer & Radiation Group, Department of Chemistry, University of Queensland, Brisbane 4067, Australia.)

AROMATIC COMPOUNDS

July 15-19. 5th International Symposium on Novel Aromatic Compounds. St. Andrews, UK.

(Dr. P. J. Garratt, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK.)

CHEMICAL RESOURCES OF THE OCEAN

September 22-28. Chemical Resources of the Global Oceans — CHEMRAWN IV. Massachusetts, USA.

(J. R. Moore, Director, Marine Science Institute, University of Texas, Austin, TX 78712, USA.)

1986

PESTICIDE CHEMISTRY

August 10-17. 6th International Pesticide Chemistry Congress. Ottawa, Canada.

(Dr. H. V. Morley, London Research Station, Agriculture Canada, University Sub-Post Office, London, Ontario, Canada.)

PHYSICAL ORGANIC CHEMISTRY

August. 8th IUPAC Conference on Physical Organic Chemistry. Tokyo, Japan.

(Prof. M. Oki, Department of Chemistry, Faculty of Science, University of Tokyo, Tokyo 113, Japan.)

Sociedad Química del Perú

The Chemical Society of Peru will, on 17 October 1983, celebrate the 50th anniversary of its foundation. One of the events being organized to mark this occasion is the Latin-American Congress of Chemical Sciences (Lima, 17-22 October 1983). The scientific programme will include presentation and

discussion of papers concerned with the advances made in Latin America over the last 50 years in scientific, technical, economic and educational matters connected with chemistry. It is envisaged that there will also be lectures and round table discussions on subjects of general interest, led by eminent scientists. Peru has applied for membership of IUPAC and, until that application has been considered by Council, may accept Observer Country status.

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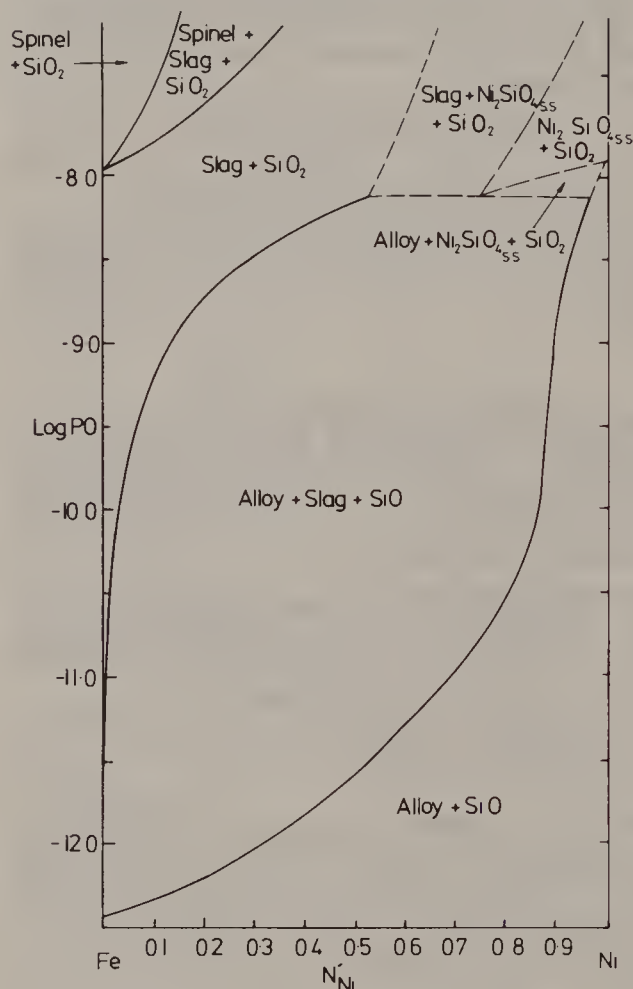
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(venue of the 32nd IUPAC General Assembly,
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Issue No. 3, half way through my first year as an editor and I still do not know if what I am putting together is to your liking. This is, of course, nobody's fault — you have, as I *write* this, only seen issue No. 1 and, as you will know by the time you *read* this, issue No. 2 was different. Some, it may be many, of you will be familiar with this journalistic time-lag because you are yourselves associated with the production of journals or are the authors of books. For me it has been a strange experience but has certainly made me appreciate even more than before how the time can slip by between the production of an idea and its appearance in print, even when no other person has to be consulted. Multiply this time by the number of processes and constraints that have to be undergone before an IUPAC proposal can become official and it becomes clear that the rate of IUPAC progress is not as incredibly slow as some of our critics would have us believe. Be that as it may, surely we cannot be perfect, so there must be some ways of speeding up our IUPAC procedures without lowering our high standards. Has anyone any ideas? Incidentally, it was interesting to read that ICSU is also criticized for slowness in action, so we are in good company.

I hope that those of you who will be attending the IUPAC General Assembly at Lyngby will find something of interest in the brief descriptions of Copenhagen and DTH but, more importantly, that you may find the photographs of the IUPAC Officers and Secretariat staff of value and the cry "Who is he?" may not be so frequent. The IUPAC careers of the Officers, you will notice, vary considerably — from working up through the ranks to coming in near the top of the hierarchy. This reminds me of the recurring debate, when I was a Division Member, as to whether Bureau Members should have served an 'apprenticeship' in Divisions before being presented for election, and of the oft-repeated remark of one protagonist of this view that the Bureau could not tell one part of its anatomy from another. Admittedly, during those days, a certain lack of understanding of what went on in Commissions was occasionally apparent but the fact that the Union has survived, and survived as a very active body, is perhaps an indication that the mixture resulting from the present system is about right — some thoroughly versed in the day-to-day work of the Commissions, to point out the facts of IUPAC life to the visionaries, and some new blood, to stir up the traditionalists, but, perhaps more importantly, each bringing with him his own special expertise and talents — thus ensuring the continuing vigour of the Union. In August the elections for a new set of Officers and six new Bureau Members will take place. Let us trust that the National Adhering Organizations and Council will continue to provide us with the right people for these vital positions.

THE OFFICERS OF THE UNION

President

Prof. Saburo Nagakura was born in October 1920 in Shizuoka Prefecture, Japan. He received his B.Sc. in 1943 at Tokyo Imperial University, then worked in the University as a Research Associate from 1946 to 1949, when he was appointed Associate Professor. He was awarded his D.Sc. in 1953 and in 1959 a Professorship at the Institute for Solid State Physics of Tokyo University. In 1961 he became, concurrently, Head of the Physical Organic Chemistry Laboratory of the Institute of Physical and Chemical Research.

Prof. Nagakura was Secretary of the National Committee for Chemistry of the Science Council of Japan, the Japanese National Adhering Organization of IUPAC, from 1972 to 1979. His first service in IUPAC was as an Associate Member (1969–1975) on the Commission on Molecular Structure and Spectroscopy. Subsequently, he was elected to the IUPAC Bureau in 1975 and to Vice-Presidency of the Union in 1979, becoming President in 1981.

After retiring from Tokyo University in April 1982, Prof. Nagakura has continued his research work as Director General of the Institute for Molecular Science in Okazaki. His fields of interest have been electronic structures and spectra of unsaturated molecules, molecular interactions (mainly on hydrogen bonding and electron donor–acceptor interactions), and reaction intermediates (including excited molecules) and reaction mechanisms. Amongst several honours he was awarded the Prize of the Chemical Society of Japan in 1966, Asahi prize (1971) and Japan Academy Prize (1978).

Vice-President

Dr. William George Schneider was born in Wolseley, Saskatchewan, Canada, in June 1915. He was awarded his B.Sc. in 1937 and M.Sc. in 1939 from University of Saskatchewan. In 1941 he received a Ph.D in physical chemistry from McGill University, Montreal. Until 1943 he was a Research Associate at

Harvard University, then moved to the Oceanographic Institute at Woods Hole, Massachusetts as a Research Physicist. He started his career with the National Research Council of Canada as Head of the General Physical Chemistry Section in 1946. He became Director of the Division of Pure Chemistry in 1963. In 1965 he was appointed Vice-President (Scientific) of the NRC and was President from 1967 until his retirement in 1980. Since then he has been a consultant in research and development.

Dr. Schneider's scientific research has been in various areas of physical chemistry, such as the study of intermolecular forces and molecular properties. His work in high resolution proton magnetic resonance resulted in a number of important contributions to structural chemistry, proton exchange behaviour and hydrogen bonding. He is also noted for extensive studies of organic crystal semi-conductors. He has received awards and honorary degrees from several Canadian universities.

Dr. Schneider has been much involved in IUPAC's initiatives of recent years on Chemical Research Applied to World Needs. He was General Chairman of the Organizing Committee of CHEMRAWN I: World Conference on Future Sources of Organic Raw Materials (Toronto, 1978). After helping with the initial arrangements for CHEMRAWN II (see *Chem. Int.* 1983, No. 1, pp. 26–29), he has collaborated with our Dutch colleagues in setting up CHEMRAWN III: World Conference on Resource Material Conversion to meet Future Needs (The Hague, 1984). Dr. Schneider was a member of the IUPAC CHEMRAWN Committee from 1978 and served as Vice-Chairman.

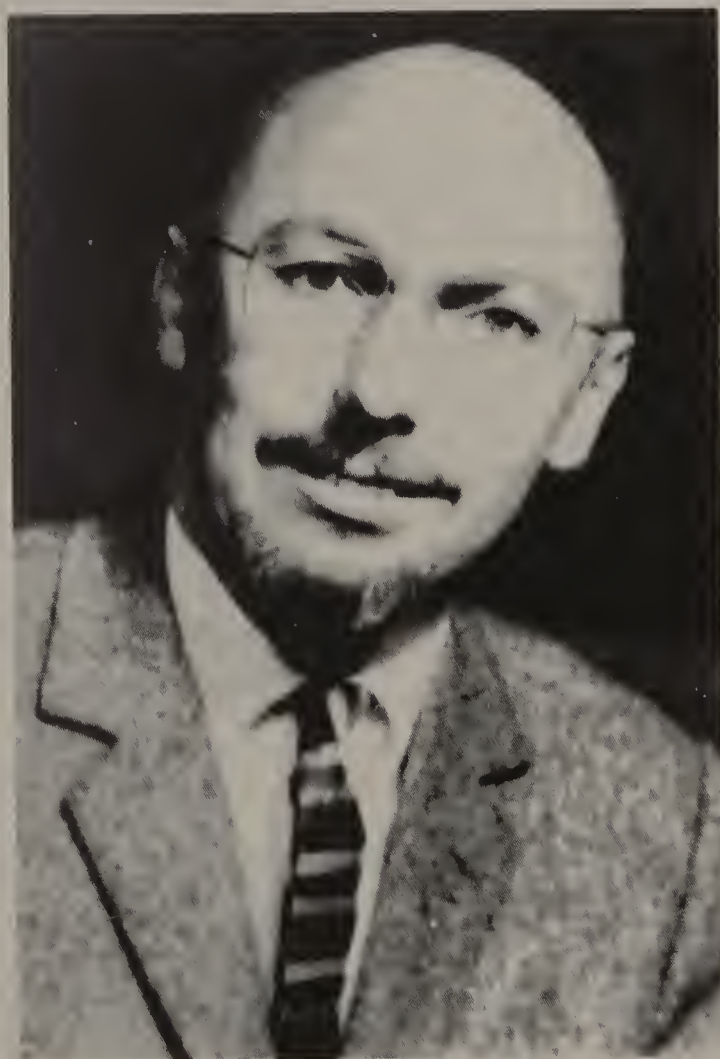
He was elected Vice-President of the Union in 1981 and has conducted the first statutory critical assessment of programmes and projects of all IUPAC bodies.

Secretary General

Prof. Guy Ourisson was born in Boulogne-Billancourt, France, in 1926. He was granted his Agrégation des Sciences Physiques at the Ecole Normale Supérieure (ENS), Paris, in



Prof. S. Nagakura



Prof. G. Ourisson



Dr. W. G. Schneider

1950, from where he went to Harvard University for further study on organic chemistry, being awarded his A.M. in 1951 and Ph.D. in 1952. He returned to ENS as Agrégé-préparateur (junior lecturer) in chemistry and received his Dr. Sc. in 1954. He was appointed, in 1955, to University of Strasbourg as Maître de Conférences (senior lecturer). He was granted a personal chair in 1958 and, when the University of Strasbourg was divided into three separate universities in 1969, became for 5 years President (Président-fondateur) of the new Université Louis-Pasteur, in which he is now professor of organic chemistry of natural products.

Prof. Ourisson has established an international reputation for his research contributions in the field of organic geochemistry and bio-organic chemistry, as shown by the award of numerous scientific awards and other honours. He has been active in various scientific committees in France and other countries, and during 1981–1982 was seconded from Strasbourg to work with the French government in Paris as Directeur Général des Enseignements Supérieurs at the Ministry of Education.

His service within IUPAC has been extensive, initially as a member of the Organic Chemistry Division Committee (1961–1971) and Division President (1971–1973). He was a Titular Member of the Commission on Chemical Taxonomy (1965–1973) and Chairman of the Publications Committee (1973–1975). In 1983 he will complete the maximum permitted eight years as Secretary General of the Union.



Dr. W. Graulich

Treasurer

Dr. Wilhelm Graulich was born in December 1912 in Södel, Hesse, Germany. He completed his formal education at the University of Giessen, being awarded his Ph.D. in 1939. Subsequently he joined the rubber laboratory of IG Farbenindustrie AG and was responsible for the production of improved synthetic rubbers. After World War II Dr. Graulich continued work on polymerization with Bayer and developed a chloroprene rubber which was in production by 1957. In that year he took over management of the Production Department of Erdölchemie GmbH (ethylene and butadiene, and their follow-up products and by-products) and in 1959 was appointed a Director. In 1964 he became a Director of Bayer AG and General Manager of Erdölchemie. Subsequently (1971) he returned to Bayer at Leverkusen as Technical Head of the newly created Rubber Division.

Dr. Graulich's scientific work is reflected in some 80 patents as well as in numerous publications. Over a number of years he held offices and honorary posts in Gesellschaft Deutscher Chemiker and Deutscher Kautschuk Gesellschaft. For his services to the synthetic rubber industry, in 1977 he received the IISRP General Award, the highest distinction which the International Institute of Synthetic Rubber Producers can confer.

Before his election as IUPAC Treasurer in 1980, Dr. Graulich served for five years on the Finance Committee of the Union.

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

CHEMRAWN Committee:

Manila, Philippines, 11 December 1982

1. SCIRAWN

The Committee feels the primary role of ICSU is to support the International Unions and that ICSU should only organize CHEMRAWN-type conferences in areas in which it is better qualified than are the individual Unions. If the proposal is to be pursued, one possible area is the "molecular basis of carcinogenesis." The International Union of Biochemistry and the International Union of Biological Sciences are possible prime sponsors. Dr. Rossiter will discuss this with ICSU leaders in Stockholm, Sweden, on 24 January 1983.

2. CHEMRAWN II

Dr. Rossiter expressed his pleasure with the outcome of CHEMRAWN II and also his deep appreciation to all those who contributed to its success. He noted in particular the important roles played by the CHEMRAWN Committee members and Drs. Nagakura, Schneider and Zollinger. Dr. Rossiter noted that the ultimate success of CHEMRAWN II will depend on the work of the Future Actions Committee and the impact of the recommendations upon policy-makers worldwide in the fields of chemistry, food and agriculture. He was optimistic that the Conference will be financially successful. Some surplus funds might be used to enable a broader distribution of the published reports, particularly in developing countries. The remainder would go into the CHEMRAWN account to support future CHEMRAWN conferences.

3. CHEMRAWN III

Dr. Beek reported that the Organizing Committee for CHEMRAWN III, *World Conference on Material Resource Conversion to Meet Future Needs: (Bio)Chemical Process Bridge*, had been established under his own chairmanship. The Conference will be held in The Hague, 25–29 June 1984. The basic plan, which is being developed in cooperation with COCI, is a follow-up of CHEMRAWN I, involving a review of the changes in raw materials and their availability, together with flexible approaches to manufacturing operations. A simplification of the title was suggested.

4. CHEMRAWN IV

Dr. Rossiter reported that preliminary arrangements for the development of CHEMRAWN IV, *Chemistry and Resources of the Global Oceans*, are in hand, according to the Program Chairman, Prof. P. A. Meyers, University of Michigan, and will be held at the Woods Hole Oceanographic Institution, Massachusetts, 22–28 September 1985. Dr. Schriesheim (Exxon) will act as COCI liaison for this meeting.

5. CHEMRAWN V

Dr. Egan reported his further discussions on proposals for CHEMRAWN V, dealing with the molecular basis of carcinogenesis, with Dr. Donnet, Prof. F. W. Sunderman, Jr. (President of IUPAC Clinical Chemistry Division), the COCI Committee at its meeting in London on 17 September 1982, and with the new director of WHO International Agency for Research on Cancer, Dr. L. Tomatis. A general understanding of the objectives had been reached, together with tentative approval of the revised title, but no date or location had yet been decided (see also Minute 1).

6. CHEMRAWN VI

Dr. Egan reminded the Committee that CHEMRAWN VI, *The Chemistry and Technology of Water and Waste Water*, is being planned in the Federal Republic of Germany for 1986. Dr. Egan will serve as Committee liaison to the meeting.

7. Other CHEMRAWN proposals

Dr. Uchida referred to an earlier Japanese proposal to host a CHEMRAWN conference on Chemistry and Materials in Japan. Interest centered on new building materials and composites for use in shelter and other construction areas. It was agreed that this could provide the basis for a future CHEMRAWN conference on Chemistry Applied to World Shelter Needs. Dr. Uchida will prepare a prospectus for discussion by the Committee at its next meeting.

Dr. Sidhu suggested that consideration should also be given to a conference on Future Sources of Inorganic Raw Materials and agreed to prepare proposals in advance for discussion at the next meeting of the Committee.

8. UNESCO International Organization for Chemical Sciences in Development

Dr. Donnet reported he attended the IOCD International Chemical Workshop on Chemistry, Food and Agriculture held in Ljubljana, 26–31 August 1982, and recommended that chemical education be represented at future CHEMRAWN conferences. It was agreed that IOCD should be invited to send an observer to the next meeting.

9. Next meeting

The next meeting of the Committee will be held 0900–1300 and 1400–1830 hours on 19 August 1983, at the Technical University of Denmark at Lyngby, Copenhagen, on the occasion of the 32nd IUPAC General Assembly. Divisional Presidents (or their representatives) will be invited. A joint meeting with COCI will be held 0930–1330 hours on the following day.

H. Egan

Applied Chemistry Division (ACD) Committee: London, UK, 8–10 October 1982

1. Membership of the Division Committee

The Secretary was instructed to call for nominations for the Division Committee in February 1983 to fill the two vacancies resulting from the end of the terms of service of S. Luxon and J. Oksanen in September 1983.

2. Assessment of Commissions' programmes

2.1. Assessment of the programmes of each Commission was made by reference to documents prepared by the President from the reports of each of the Chairmen of Commissions. These documents would be sent to the Chairmen of the four 'active' Commissions for completion and updating; they would then be published in the 1983 listing of Current Programmes. (The Commissions on Water Quality, Atmospheric Environment and Reclamation of Solid Waste were appraised separately.)

2.2. Two new projects were approved for the Commission on Food Chemistry:

- (a) Chemical determination of Fusarium Mycotoxins in food and feed.
- (b) Rapid pre-selection method for benzo(a) pyrene and glass capillary gas chromatographic profile analysis of polycyclic aromatic compounds in smoked foods.

3. Reports of Chairmen of the Working Groups of 'Suspended' Commissions

The Vice-President, Dr. P. C. Kearney, acted as Chairman for this part of the meeting.

3.1. *Commission on Atmospheric Environment.* The membership of the Working Group was: Prof. J. Calvert (National Center for Atmospheric Research, Boulder, CO, USA), Dr. H. Egan (ACD), Mr. S. G. Luxon (ACD), Dr. P. C. Kearney (ACD), Mr. K. Lechnitz (Chairman, Commission VI.4). Kurt Lechnitz pointed out that in chemistry the three states of aggregation (solid matter, liquid and gas) are all of great importance and in agreement with stated aims and objects of IUPAC. Future commission activities would cover stratospheric and tropospheric chemistry, ambient atmosphere and workplace environment. It was suggested that the name of the Commission should be changed to 'Commission on Atmospheric Chemistry'.

3.2. *Commission on Water Quality.* The membership of the Working Group was: Prof. Dr. Malz (Emschergenossenschaft, Essen, FRG), Dr. L. E. Coles (ACD), Mr. Schjødtz-Hansen (Chairman Commission VI.6). P. Schjødtz-Hansen reported that the main conclusion was that the current activities were acceptable and valuable in spite of certain difficulties during the period 1977–1980. High priority should be given to water treatment for supply and irrigation, industrial wastewater treatment and sludge disposal and receiving waters (aquifers, rivers, lakes, estuaries, coastal waters, oceans). The Working Group recommended a more diversified composition of a renewed Commission in terms of geographical distribution and professional back-

ground. Possible new names of a renewed Commission could be 'Commission on Water and Effluent Chemistry' or 'Commission on Water and Solid Waste Chemistry'.

3.3. *Commission on Reclamation of Solid Wastes.* The Working Group consisted of: Dr. P. Brunner (Eidgen. Anst. für Wasserversorgung, etc., Abt. Feste Abfallstoffe, Dübendorf, Switzerland), Prof. M. Naudet (ACD), Mr. L. G. Lindfors (Secretary of former Commission VI.7). The deliberations of the Working Group had led to the conclusion that, for the foreseeable future, IUPAC would not need a Commission on Reclamation of Solid Wastes. 'Waste Chemistry' could be handled by a new Commission on Water and Solid Waste Chemistry.

3.4. It was agreed that the Chairmen of the three Working Groups would prepare final reports. The President would then decide how best to submit these views to IUPAC Vice-President W. G. Schneider. Mr. Luxon volunteered to prepare a statement on the role of IUPAC in environmental matters.

4. Guidelines for IUPAC projects

The guidelines were discussed and the Committee was informed that a new version had been agreed in Prague in September 1982 at the 46th Meeting of the Bureau. It was agreed that whenever the value of a project was in doubt the advice of outside experts should be sought.

5. Forms and project descriptions

The annual progress report and current programmes were examined. To prevent overlapping between Commissions, it was emphasized that there should be a stronger liaison between the corresponding members and the Commissions, either through the Chairman or the leaders of each project and to keep the Secretary of the Division fully informed.

6. Publication matters.

It was noted that the future of *Chemistry International* was uncertain and there was a continued dissatisfaction with *Pure and Applied Chemistry* (PAC) because of the slowness of publication and the extremely limited circulation.

7. Divisional rules and guidelines

As a result of comments received and discussion at the meeting, the rules and guidelines were amended.

8. Harmonization of collaborative analytical studies

Dr. Egan reported on the progress of the international co-operation of harmonization and emphasized the recognition of the need to agree to definitions for the main analytical parameters through the Analytical, Applied and Clinical Chemistry Divisions and International Standards Organisation. A joint international symposium was to be held in Washington from 25 to 27 October 1984.

9. Relations to other bodies

9.1. *International Standards Organisation.* Since 1973 there has been an active liaison between IUPAC and ISO and the Oxford Secretariat has been the co-ordinating centre. However, lack of resources has

resulted in the IUPAC Secretariat having to leave any future collaboration to the Divisional Committees or through one of their Commissions.

9.2. Interdivisional Committee on Nomenclature and Symbols. Dr. Egan reported on the meeting of IDCNS at Oxford in September and pointed out that the Applied Chemistry Division did not have a commission on nomenclature and it was important that ACD views should be known to IDCNS.

9.3. CHEMRAWN. The programme for the next five years was outlined and a discussion took place concerning the need for the ACD to be an integral part of the arrangements. Discussions will be resumed at Lyngby, when the reports from CHEMRAWN II and information on CHEMRAWN III will be available.

9.4. SCOPE. The IUPAC Committee on SCOPE no longer exists. Dr. Egan has now been succeeded as the IUPAC representative to SCOPE by Dr. Kearney. SCOPE Newsletters are made available to Division Presidents by the IUPAC Secretariat; the President will inform the Division Committee and Commission Chairman should projects arise within SCOPE that would seem to require attention or liaison.

10. Reports were received from the Commission on Food Chemistry, Commission on Biotechnology, Commission on Oils, Fats, and Derivatives, and the Commission on Pesticide Chemistry.

11. Reports of the 45th Meeting of Bureau (Leuven, 2 September 1981) and the Minutes of the 31st Meeting of Council (Leuven, 1–2 September 1981) were received.

12. Financial matters

The President reported that the financial situation in the Division was satisfactory since claims for travelling and expenses had not been as much as anticipated.

13. Next meeting

The next meeting will be held in the Technical University of Denmark, Lyngby, Denmark, at 9.30 a.m. on Thursday, 18 August 1983. There would be a full open meeting of the Division at Lyngby between 11.30 a.m. and 12.30 p.m. on 22 August 1983.

L. E. Coles

IUPAC General Assembly, August 1983, Lyngby.

Commission I.2 discussed reports of their Task Groups on the Revision of the Manual of Symbols and Terminology of Physicochemical Quantities and Units and its Appendices (Chairman: G. Somsen, Amsterdam) and on the Coordination of Meetings (Chairman: W. Zielenkiewicz, Warsaw) as well as of their Subcommittees on Thermodynamic Tables (Chairman: H. V. Kehiaian, Paris) and on Transport Properties (Chairman: J. Kestin, Providence, Rhode Island).

One of the most important activities of Commission I.2 recently has been the production of Appendix IV to the *Manual of Symbols and Terminology for Physicochemical Quantities and Units*. It has now appeared in *Pure and Appl. Chem.*, Vol. 54, No. 6, pp. 1239–1250 (1982) and *J. Chem. Thermodyn.* **14**, 805 (1982). Discussion will be continued with respect to the proposed change of the Standard State Pressure from 101 325 Pa to 10^5 Pa.

The 7th International Conference on Chemical Thermodynamics (Chairman: M. L. McGlashan, London) had an attendance of 235, with 145 posters, 10 plenary lectures and the Rossini Lecture given by E. F. Westrum, Jr., Ann Arbor, Michigan. The 8th International Conference (Chairman: P. A. G. O'Hare, Argonne, Illinois) will be held at McMaster University, Hamilton, Ontario, Canada, 13–17 August 1984, as a joint meeting with the Calorimetry Conference.

E. F. Westrum, Jr., Ann Arbor, Michigan, reported on points of common interest with CODATA and I. Wadsö, Lund, gave a status report on the work of the Interunion Commission on Biothermodynamics. Interaction of IUPAC (representative: S. Angus, London) with the European Federation of Chemical Engineers is starting.

Commission I.2 was kept informed about the good condition of the *Journal of Chemical Thermodynamics* (editors: M. L. McGlashan, London, and P. A. G. O'Hare, Argonne, Illinois), of the *Bulletin of Chemical Thermodynamics* (editor: R. L. Freeman, Stillwater, Oklahoma) and of the Thermodynamic Tables Projects Center (Director: S. Angus, London).

Activities were discussed to improve dissemination and acceptance of Commission reports (e.g. translation into languages other than English).

G. M. Schneider

Commission I.2 — Thermodynamics:

London, UK, 7 and 9 September 1982

The meetings were held on the occasion of the 7th International Conference on Chemical Thermodynamics, University College, London, 6–10 September 1982. All but three of the Titular Members, Associate Members and National Representatives were present. The Chairman reported the death of Dr. G. T. Armstrong, Washington DC; his critical insight as well as his scientific judgement will be missed by Commission I.2 and the world scientific community.

The main purpose was to prepare the meetings of Commission I.2 to be held on occasion of the

Commission VI.3 — Oils, Fats, and Derivatives: Zeist, Netherlands, 7–9 September 1982

The annual meeting of the Commission took place in rooms of the TNO. About 35 persons attended this meeting: Members of the Commission, Representatives of TNO and of several Dutch industries, Observers of ISO, NNI, IOCC, FOSFA, AOAC, IOOC.

1. Chairman's report

The Chairman outlined the main activities of the Commission, in particular the preparation and

publication of analytical methods. He emphasized the development of guidelines for conducting collaborative studies, and also of newer methods employing enzymes, HPLC, and capillary column GLC. He has also mentioned the objective of assisting industry to meet its specific needs.

2. Conclusion of the discussion

Results of the different working groups (WGs) were discussed and the conclusions were:

WG 4: Determination of chlorinated pesticides in woolwax

It appears that there is no real need for a method at present. Further work is cancelled but G. Zwerenz will prepare a report of the results obtained to date.

WG 8: Identification and determination of emulsifiers derived from fatty materials

It seems impossible to have one single and general method for these determinations. H. Brüscheweiler will improve the text used this year.

WG 9: Publications

A. Hautfenne announced the publication in *Pure and Applied Chemistry* (PAC) Vol. 54, No. 6, pp. 1257-1295 (1982) of the following methods:

- 3.121 Determination of the glycerol content (Titrimetric method).
- 4.201 Determination of the total alkali content.
- 4.202 Determination of the free caustic alkali content.
- 4.203 Determination of the total free alkali content.
- 4.211 Determination of the "total fatty acids" content.
- 4.212 Determination of the rosin content.
- 4.213 Determination of the unsaponified saponifiable + unsaponifiable matter content, of the unsaponifiable matter content, and of the unsaponified saponifiable matter content.
- 4.301 Determination of the free glycerol content (Titrimetric method).
- 4.302 Determination of low free glycerol content (Spectrophotometric method).
- 4.311 Determination of moisture and volatile matter content (Oven method).
- 4.312 Determination of the water content (Azeotropic distillation method).
- 4.313 Determination of the ethanol-insoluble matter content.
- 4.321 Determination of the chloride content.
- 4.322 Determination of the chloride content (Potentiometric method).
- 4.331 Determination of the EDTA (Sequestering agent) content (Titrimetric method).

The French version of the above methods will be published soon. A further seven methods, as follows, have been published in PAC, Vol. 54, No. 12, pp. 2759-2784 (1982):

- 2.311 Determination of the erucic acid.
- 2.312 Determination of linoleic acid.
- 2.323 Solid content determination in fats by NMR (Low resolution NMR).
- 3.101 Determination of the relative density 20/20 in air and of the mass per unit volume.

3.102 Measurement of colour in Hazen units (Platinum-cobalt scale).

3.122 Determination of the acidity and the saponification equivalent.

3.138 Determination of the sulphated ash content.

WG 13: Determination of undesirable plastic-based contaminants (other than polyethylene) in oils and fats

If there is no need or specific demand for another meeting the WG will be cancelled next year.

WG 3-78: Determination of polycyclic aromatic hydrocarbons

The WG was suspended this year. G. Ostermann will continue to collect information and to get in touch with the Food Commission which has worked on similar activities. He will make inquiries to know whether Grimmer's method (JAOAC 1975, **58**, 725-733), which had been noted and mentioned at the Paris meeting (1980), is still valid.

WG 1-79: Determination of the erythrodiol in olive oil

After remarks of D. Pocklington and J. P. Wolff the title has been partly modified. The method was adopted and the text will be published.

WG 2-79: Determination of total sterols

The enzymatic method was adopted but next year a supplementary analysis will be organized to achieve a statistical evaluation. The text will be published.

WG 3-79: Determination of mineral residues in oils and fats

According to P. Hendrikse a method will be investigated in detail by NNI during next year and it was agreed to postpone the beginning of our activities.

WG 1-80: Transfer of fats and oils methods of analysis to phospholipids analysis

WG 2-80: Determination of total phospholipids and insoluble impurities in lecithins

WG 3-80: Qualitative and quantitative determination of phospholipids and determination of phosphorus content

These WGs will pursue their activities to obtain sufficient results for statistical evaluation.

WG 1-81: Determination of solvent residues in cakes

It appears that, even if the results are not completely satisfactory, the method may be considered as good. The difficulties arise in sampling. A new circular analysis will be organized.

WG 2-81: Determination of triglyceridic composition

This year, rather saturated triglycerides have been analysed. Results are satisfactory. Next year analysis of highly unsaturated and hydrogenated triglycerides will be carried out. Analysis of triglycerides in the presence of mono- and diglycerides will also be proposed.

WG 1-82: Determination of thiobarbituric acid value, Coordinator J. Pokorny, has been created.

Several other topics have been proposed for the future:

- Determination of tocopherols in vegetable oils.
- Determination of fatty acids *trans* isomers by infrared spectrophotometry.
- Determination of antioxydants by HPLC.
- Determination of $\omega 6$ – $\omega 3$ fatty acids.
- Determination of metal content.
- Detection of butterfat by determination of butyric acid.

During the meeting the problem of toxic solvents was also discussed. A committee will study the state of our methods with regard to this question.

3. Next meetings of the Commission

19–21 August 1983, Lyngby, Denmark, 32nd IUPAC General Assembly.

1984, Finland, at invitation of Finnish delegation.

1985, France, 33rd IUPAC General Assembly.

A. Hautfenne

Commission VII.1 – Automation and Clinical Chemical Techniques:

Hannover, FRG, 15–16 November 1982

The meeting on 16 November 1982 was held jointly with the IFCC Expert Panel on Instrumentation.

1. The draft document *Nomenclature for Automated Analysis* produced jointly with Commission V.3 had been submitted to the respective Division Committees for processing. Comments collected by the Divisions were discussed and an updated version produced for consideration and approval for publication by the Division Committees.

2. The new documents on (a) Electronic data processing and microprocessing in Clinical Chemistry and (b) bio-analytical nomenclature, to be produced jointly with Commission V.3, were then considered. It was decided that detailed specifications for (a) and (b) should now be worked out not later than 1 March 1983. The drafting of the two documents would be the main task at the joint meeting in Copenhagen in August 1983.

It was proposed that Commission VII.1 should prepare an additional document *Classification of*

Analysers with R. Haeckel as coordinator. Such a document could be produced in collaboration with Commission V.3 and the IFCC Expert Panel on Instrumentation. Specifications for such a document would be worked out before the Copenhagen meeting to be appended to the application to the Division Committee.

3. Collaboration with the IFCC Expert Panel on Instrumentation was discussed at the joint meeting.

(a) First steps have already been taken to co-ordinate the activities in Commission VII.1 and the Expert Panel by the election of C. Burtis and R. Haeckel, both members of the Expert Panel, also as Titular Members of Commission VII.1.

(b) It was decided to propose P. Bonini (Italy) and D. Geary (Australia), both members of the Expert Panel, to serve as new Titular Members on Commission VII.1 from the 32nd IUPAC General Assembly in Copenhagen, August 1983. On that occasion J. Bierens de Hahn and M. Hjelm will leave Commission VII.1 as Titular Members having serving their full term in office. The nominations, if approved by the Division members, would result in all Titular Members of Commission VII.1 also being members of the IFCC Expert Panel on Instrumentation. This would have considerable practical and financial advantages.

(c) A co-ordinated program for future work in the two bodies should be worked out and be discussed in Copenhagen in August 1983.

4. Meetings during the 32nd IUPAC General Assembly, Lyngby, Denmark, 1983, will be:

18 August: Division Executive Committee and Officers of the Commission
Participants: Chairman, Commission VII.1

20 August: Commission VII.1
(all day) *Participants:* Titular and Associate Members of the Commission and National Representatives

22 August: Commission VII.1
(all Day) continued

23 August: Open meeting of the Division

M. Hjelm

The IUPAC Secretariat Staff



Dr. M. Williams

Dr. Maurice ("Mo") Williams was born in Birmingham, UK, in April 1932. He graduated from University of Birmingham with B.Sc (Chemistry) in 1953 and Ph.D. (1956) in analytical chemistry under the direction of Prof. R. Belcher and Dr. T. S. West. Following a period (1956–1958) as Technical Officer in the Research Department of Imperial Chemical Industries, Metals Division, he spent seven years as Lecturer in Analytical Chemistry at Birmingham College of Advanced Technology (later University of Aston in Birmingham). During this time he became involved in editing the Pergamon Press international journal of analytical chemistry, *Talanta*, and eventually moved to Oxford in 1966 as Managing Editor of Pergamon's Learned Journals Department. He was appointed the first Executive Secretary of IUPAC in 1968, since when he has been responsible for undertaking the administration of the Union, under the supervision of the Secretary General and Treasurer, and for the daily running of the Secretariat.

Miss Ann Troughton was born in October 1934. She was educated locally at Wisbech High School and subsequently trained as a secretary. In 1957 Ann came to Oxford to work as a secretary for A. C. Nielsen Co. Ltd. (marketing consultants). After a short spell (1961–1962) with the Ministry of Agriculture, Fisheries and Food, she moved to Pergamon Press, where she was in Mr. Robert Maxwell's personal secretariat. Later (1962) she became involved in book sales at Pergamon as Area Sales Manager for East Europe and Middle East, and was also responsible for sale of translation rights and reproduction permission. She joined the IUPAC Secretariat staff in 1975 as Assistant Secretary and was appointed Deputy Executive Secretary in 1982.



Miss A. Troughton

Mr. Pindi Dass Gujral was born in Rawalpindi in February 1933. After partition of India his family moved to New Delhi, where he graduated with B.Sc. (Chemistry) in 1952 and M.Sc. (specialized in organic chemistry) in 1954. He carried out research on chemistry of natural products under Prof. T. R. Seshadri (1954–1956), then joined the Publications and Information Directorate of CSIR as an Assistant Editor. In 1966 he came to London and was responsible at Butterworths for editing IUPAC publications. He became IUPAC's Assistant Secretary (Publications) in 1970 and Scientific Publications Secretary of the Union at the end of 1982.



Mr. P. D. Gujral



Mr. R. Fennell

Mr. Roger Fennell was born in December 1923 at Seghill, Northumberland. His academic studies at University of Oxford began in 1942, but were interrupted for army service after which he joined the Royal Aircraft Establishment at Farnborough (1944). In 1946 he went back to Oxford and received his B.A. in chemistry (1948), then returned to Farnborough. In all he spent 38 years in the Analytical Section (from 1952 as its Head) of the Chemistry Department, where he was eventually Principal Scientific Officer and built a sound reputation for microanalytical work. During 1963–1967 he was a Titular Member of IUPAC's Commission on Analytical Nomenclature and served as Secretary of the Union's Analytical Chemistry Division (1967–1975). On retirement from RAE in 1982, he accepted an invitation to edit the IUPAC news journal, *Chemistry International*.



Mrs. Erica Sheppard was born in March 1953. She graduated with a B.A. in German (1974) from University College London, then took a secretarial course for graduates. Her first employment (1975) was with Southern Gas, and later she worked at Ind Coope Ltd. Since 1977 she has been Confidential Secretary to Dr. Williams at the IUPAC office.



Mrs. Joy Preston (born in December 1931) is standing in as secretary to Ann Troughton while her permanent secretary, Mrs. Ulrike Inglis, is away in Canada for a year with her husband.



Mrs. Valerie Gomez was born (August 1932) and educated in Bognor Regis. She came to the IUPAC Secretariat in 1979 from B. H. Blackwell Ltd. (booksellers) as secretary to Mr. Gujral.

Office hours

The Secretariat is open at the following (UK) times:

Monday–Thursday	0900–1300 1400–1730
Friday	0900–1300 1400–1630

There is usually somebody in the office to answer the telephone during the 1300–1400 break, but this cannot be guaranteed.

32nd IUPAC General Assembly

Lyngby, Denmark

Members of IUPAC bodies cannot fail to know that the next General Assembly will be held in the Technical University of Denmark (Danmarks tekniske Højskole, DTH). It was founded in 1829 in Copenhagen, the first Director being the eminent physicist Hans Christian Oersted, who demonstrated the relationship between electricity and magnetism.

The University has been forced to move from place to place as it, or the town, developed and expanded. The transfer to Lyngby, about 15 km north of the centre of Copenhagen, was completed in 1973. As those who intend to take part in the General Assembly will have seen from

the booklet distributed by the IUPAC Secretariat, travel to and from the centre of Copenhagen is not difficult, although the ticket system might take some getting used to by those unfamiliar with this sort of thing — like, for example, the British professor who travelled, quite innocently, for a couple of days in Munich (1973) as if still a child.

Even if you do get lost, it appears that a high proportion of Danes speak English, some speak German and a few French. In the hope that they may be of interest, or even helpful, to General Assembly participants, some notes on Copenhagen itself appear on pp. 15–17.

(Cover photograph courtesy of Informations-Sekretariatet, DTH.)

Amendments to the timetable of meetings

<i>Chemistry International</i> Editorial Board	Friday 19 August	9.30–12.30 (2)
Subcommittee on Numeric Data Bases	Friday 19 August	14–17 (2)
Briefing Meeting — Division Presidents and Secretaries and Officers of Committee on Teaching of Chemistry	Wednesday 17 August	17.30 (5)

Council meetings will be held in Auditorium 81, Building 116.

OTHER PEOPLE'S PUBLICATIONS

This section contains brief notes on the contents of publications issued by organizations with which IUPAC is in some way connected. If you wish to have more information about any of the items mentioned, would you please write to the appropriate person as given in *Chemistry International*, 1982, Supplement, pp. 3–5 or 11–12? Staffing levels at the IUPAC Secretariat are such that enquiries might take a long time to be dealt with.

International Council of Scientific Unions (ICSU)

ICSU Newsletter No. 12, December 1982. UNESCO 4th Extraordinary General Conference to consider and adopt a Medium-Term Plan for 1984–1989. Major programmes of possible IUPAC involvement are: Education, Training and Society; The Sciences and their Application to Development; Information Systems and Access to Knowledge; Science, Technology and Society; The Human Environment and Terrestrial and Marine Resources.

Notes on: 16th General Meeting of SCOR (a report of the meeting is published in SCOR Proceedings Volume 18); CODATA 13th General Assembly and 8th International Conference (a brief report is given in CODATA Newsletter No. 24).

ICSU Newsletter No. 13, February 1983. Decisions of the ICSU Executive Board: review of ICSU statutes and rules of procedure to continue; CHEMRAWN Conferences should not have competition from SCIRAWN; creation of an ICSU Press authorized in principle; a group is to review the disposal of toxic wastes and the possible involvement of ICSU. Committee on Teaching of Science planning a Conference on Science and Technology: Education and Future Human Needs to be held in 1985. Report on CHEMRAWN II. Invitation to submit research suggestions to CASAFA. Article on International Union of Psychological Science (IUPsyS).

ICSU Scientific Committee on Problems of the Environment (SCOPE)

Newsletter No. 19, January 1983. Progress on the report of the project on Climate Impact Assessment, due to be published in 1983. Developments in the World Climate Impact Studies Programme. Recent publications on climate impact; recent and forthcoming meetings on climate impact. News of the SCOPE/UNEP International Sulphur Unit in Pushchino, USSR.

International Union of Food Science and Technology (IUFoST)

IUFoST Newsletter, New Series, No. 7, December 1982. Notice of meetings before (3rd International Symposium on Properties of Water in Food, Beaune, France) and after (3rd International Congress on Engineering and Food, Dublin, Ireland) the 6th World Congress of Food Science and Technology, Dublin, Ireland. Election of Officers 1983–1987. Reports on: Symposium on Food Research and Data Analysis, Oslo, September 1982; CHEMRAWN II; ICSU General Assembly; 3rd meeting of CASAFA, Paris, France, June 1982.

Federation of Asian Chemical Societies (FACS)

FACS Newsletter No. 1/1983, February 1983. Biennial report 1981–1983; minutes of 1st FACS General Assembly, April 1981; report on Golden Jubilee Symposium of the Chinese Chemical Society, Nanjing, September 1982; report on CHEMRAWN II.

International Union of Pure and Applied Biophysics (IUPAB)

IUPAB News, March 1983. Calendar of meetings 1983–1984. Minutes of the Council Meeting, Kandersteg, Switzerland, January 1983, including an Appendix on preparations for the 1984 IUPAB Congress. Report on the 2nd International Conference on Water and Ions in Biological Systems, Bucharest, Romania, September 1982.

Groupe pour l'Avancement des Methodes Spectroscopiques et Physicochimiques d'Analyse (GAMS)

GAMS Information Bulletin No. 77, January and February 1983. Obituary on Dr. H. Massmann. Programme on 3rd Congress of Fundamental and Applied Mass Spectrometry, Palaiseau, April 1983. Programme of 35th GAMS Congress and 3rd Congress of Analytical Chemistry, Paris, December 1983.

COPENHAGEN

(København, Merchant's Harbour)

There is evidence that the site of the inner town has been inhabited for about 6000 years but we will jump a few millennia, to 1000 AD, when there was a fishing village called Havn which was becoming both commercially and militarily important, being adjacent to a good natural harbour and on an important maritime trade route. To protect the citizens against sea-borne invasion, Bishop Absalon of Roskilde built a castle and thus, in 1167, founded the city. Remnants of this castle are to be found in the cellars of the Christiansborg Palace. The first civic charter was granted by the Bishop of Roskilde in 1254 but in 1417 the city passed to the crown and received a royal civic charter in 1443; the monarch took up residence in 1445. The University was founded in 1479 and the naval base and shipyards were established not long afterwards.

The city prospered immensely during the reign of King Christian IV (1588–1648) and many fine buildings and palaces were built, some of which survived the devastating fires of 1728 and 1795. As might be expected, the city was subject to a number of attacks and sieges during its long history; in the wars with Sweden, the whole of Denmark except for Copenhagen was overrun and the city was besieged, unsuccessfully, for two years (1658–1660). During those early days, the city was protected on its landward side by moats and ramparts, taken down in 1872, the remains of which have been incorporated into parks and gardens and, at the northern end, the Citadel. West of the ramparts are three freshwater lakes, St. Jørgens Sø, Peblinge Sø and Sortedams Sø. Copenhagen was twice attacked from the sea by the British Navy, in 1801 and 1807.



Christiansborg Palace



Tivoli Gardens



The Stock Exchange (Børsen)

Northeast of the central railway station and air terminal, on the far side of the Tivoli amusement park, is the Rådhuspladsen (Town Hall Square) from which, in a roughly northeasterly direction runs the main shopping street, called Strøget (the Sweep) which is a pedestrian precinct; north of Strøget are more pedestrian precincts and the cathedral church (Vor Frue Kirke, Church of our Lady, 1829), the University, the Toy Theatre Museum and Trinity Church, with its round tower (1642) formerly used as an observatory. At the far end of Strøget is Kongens Nytorv (King's New Square), the former city centre, laid out in the 17th century and containing a statue of King Christian V.



Strøget

Round this square are the Charlottenborg Palace (Academy of Arts) and the Royal Theatre (1874). On the seaward side is an arm of the harbour (Nyhavn) with gabled houses looking over it. South of the square, with the theatre on the corner, a winding street called Holmens Kanal goes past the National Bank to the naval church (Holmens Kirke, 1619) and then over a bridge to Slotsholmen, an islet on which is built Christiansborg Palace (now the seat of government), the old Stock Exchange (Børsen, 1624), the Royal Arsenal (c.1600) Museum, the Royal Library and the Thorvaldsen Museum.

Immediately to the west of Slotsholmen is the Prinsens Palace, now the National Museum but formerly the residence of Christian V and Frederick VI when they were crown princes.

From the northeast corner of Kongens Nytorv a road, Bredgade, leads up to the Citadel (1662–1663). Half way up this road, on the left is the Frederikskirke (Marble Church, begun in 1749 but not completed until 1894) and, on the right, the Amalienborg Palace, the royal residence since 1794.

Southwest from the Citadel, just to the east of the parks which are what remains of the old ramparts, runs a wide boulevard called Øster Voldgade. On the west side is the Royal Museum of Fine Arts and the Botanical Gardens (1874) with its observatory; on the east, opposite the Botanical Gardens, is the Kongens Have (the Royal Gardens) in which is the Rosenborg Palace (1610–1634), now a museum and housing the Crown Jewels. Across Gothersgade, down Nørre Voldgade and left into Vester Voldgade brings one back to Rådhuspladsen.

And where is the Little Mermaid (Den lille Havfrue)? Back up to the Citadel, northeast corner, and there she is off the sea front.

(Photographs courtesy of the Danish Tourist Board.)



The Little Mermaid

Congratulations to:

Prof. A. R. H. Cole (Australian National Representative, CTC; Commission I.5, Subcommittee on Infrared and Raman Spectroscopy) on the award of a D. Sc. by the University of Oxford for work in the field of spectroscopy and molecular structure.

Prof. N. N. Greenwood (Division II Committee) on the award of the August von Hofmann Lectureship for 1983 by the Gesellschaft Deutscher Chemiker.

Prof. W. A. E. McBryde (Commission V.6 and Subcommittee on Stability Constant Data) on the receipt of a special medal from the University of Waterloo for his contributions to the University's early development.

Dr. E. R. McCartney (Australian National Representative, Commission II.3) on the award of the Inaugural Australian Ceramic Society Award in recognition of his major contribution to ceramic education and research.

Prof. S. Nagakura (President, IUPAC) who became President-Elect of the Chemical Society of Japan in March 1983.

IUPAC colleagues deceased

We have been informed of the death of:

Prof. E. L. Delvaux, Belgium (4 November 1982) — Commission on Oils, Fats, and Derivatives (1953–1979).

Prof. J. Gažo, Czechoslovakia (15 February 1983) — Committee on Teaching of Chemistry (1973–).

Prof. J. Kůta, Czechoslovakia (6 September 1981) — Commission on Electrochemistry (1975–1979).

Prof. B. Vodar, France (15 February 1982) — Commission on Thermodynamics and Thermochemistry (1957–1967).

Prof. K. Vas, Hungary (22 November 1981) — Applied Chemistry Division Committee (1977–1981), Commission on Food Chemistry (1971–1981).

Prof. G. Sartori, Italy (4 December 1981) — Bureau (1967–1971), Inorganic Chemistry Division Committee (1965–1969).

Dr. J. F. T. Van Rensburg, South Africa (15 May 1982) — Commission on Water Quality (1980–).

Dr. V. A. Levitskii, USSR (1 January 1982) — Commission on Thermodynamics (1977–1981).

Prof. R. Belcher, UK (29 June 1982) — President of Analytical Chemistry Division (1957–1961), Analytical Chemistry Division Committee (1955–1957, 1967–1971), Commission on Analytical Reactions and Reagents (1951–1959, 1968–1977, 1979–), Commission on Microchemical Techniques (1955–1959), Commission on Analytical Nomenclature (1963–1969).

Dr. R. S. Cahn, UK (15 September 1981) — Commission on Nomenclature of Organic Chemistry (1953–1969).

Dr. K. A. Williams, UK (5 October 1982) — Commission on Oils, Fats, and Derivatives (1947–).

Dr. G. T. Armstrong, USA (9 March 1982) — IUB–IUPAB–IUPAC Commission on Biothermodynamics (1975–), Commission on Thermodynamics (1977–1981).

Dr. A. E. Cameron, USA (28 September 1981) — Commission on Atomic Weights and Isotopic Abundances (1959–1981).

Dr. A. D. Campbell, USA (22 February 1982) — Commission on Food Chemistry (1967–1981).

Dr. A. A. Dietz, USA (August 1982) — Subcommittee on Toxicology of Aluminium (1981–).

IUPAC-SPONSORED CONFERENCES

In this section the most up-to-date details available of the later 1983 Conferences are given, continuing the practice started in the last issue. Even with the increasing, and most welcome, cooperation of Conference organizers, it is becoming clear that we cannot always give all the information we should like to for all the Conferences. There can, in the extreme case, be a delay of 14–16 weeks between receipt of information by the Editor and issue of the magazine containing it. Where, owing to this sort of circumstance, information has become redundant, e.g. the date for normal registration will have been passed, it is not published. This, and the fact that we cannot publish information we have not got, largely accounts for the uneven coverage. By the time of the 1984 conference season, however, we hope to have worked out a more efficient system. Please refer to the lists on pp. 27–28 for the names and addresses of the people with whom to get in touch if you want further information.

7th International Conference on Chemical Education — Chemistry, Education and Society, Montpellier, France, 21–26 August 1983

The Conference will be held at the Université des Sciences et Techniques du Languedoc, Montpellier; the University Campus is about 4 km from the centre of Montpellier and about 10 km from Montpellier-Fréjorgues airport. The official languages are English and French; lecturers have been asked to prepare audio-visual aids in both languages and, where possible, help with translation will be provided.

Themes to be developed during the Conference are:

Problems of teaching chemistry.
Frontiers of chemistry.
Chemistry teaching facing some contemporary problems — environment, energy, population, hunger, raw materials.

Plenary lectures to be given are:

Problems arising in the teaching of chemistry in the developing countries (Prof. Faye, Senegal).
Tomorrow, what chemistry shall we teach, and for what society? (Prof. Benard, France).
Title not yet known (Prof. Prigogine, Belgium).

Contributed papers may be in the form of posters, audio-visual displays or demonstrations and there will be ten workshops, based as far as possible on the poster displays.

The *workshop* titles are: Audio-visual aids for teaching; Computer assisted learning; Teaching of experimental chemistry at tertiary level; Teaching of experimental chemistry at secondary level; Low-cost

equipment at secondary level; Safety; Chemistry and energy; Chemistry and national resources; Chemistry and environment; Chemistry, agriculture, food; Chemistry and health; Chemistry and industry; Secondary teachers' training; Tertiary teachers' training; Curriculum design; Assessment; Research into chemistry education; Chemistry and the general public; Publications.

Participants may be accommodated in a student hall or a hotel. Early booking is recommended as August is the holiday season. Registration, after 1 May 1983, attracts a fee of 1000 FF.

2nd IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis, Dijon, France, 28 August–1 September 1983

The Second IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis (IInd OMCOS) will be held on the University Campus which is located on the northeastern periphery of Dijon (France). The scope of the Symposium is "synthetically useful organic reactions involving organometallic compounds or metals, including catalysts and any kind of metal from lithium to lanthanides and actinides".

The scientific program will include classical plenary lectures (lectures A, 25 or 50 min), plenary lectures (lectures B, 25 min) which will be followed by short oral presentation of selected posters related to these lectures (mini-symposia), and poster sessions. Poster contributions will be divided into several groups. Each group will be allotted to a separate day in which 90 min will be reserved for viewing the posters, but every poster will remain displayed for the full day.



Conference Buildings, Dijon (photo courtesy of S.P.A.D.E.M.).

Plenary lectures A to be presented are:

Palladium catalyzed oxidations in selective organic synthesis (J. E. Bäckvall, Sweden).

Template catalysis via non-transition metal complexes: New highly selective syntheses on phenol systems (G. Casnati, Italy).

Some uses of silicon-nitrogen bond in organic synthesis (R. Corriu, France).

Carbon-carbon bond formation via carbonyl carbene complexes (K. H. Dotz, FRG).

Synthetic applications of some metal carbonyl complexes (M. Franck-Neumann, France).

Synthetic applications of titanium-carbene and metallacyclic complexes (R. H. Grubbs, USA).

Metal enolates in organic synthesis (T. Mukaiyama, Japan).

Progress in copper-mediated organic syntheses (J. F. Normant, France).

Natural products synthesis using organoiron complexes (A. J. Pearson, UK).

Asymmetric synthesis of amino acids via metallated heterocycles (U. Schollkopf, FRG).

Synthetic applications of simple organotitanium and -zirconium reagents (D. Seebach, Switzerland).

Recent advances in selective metal-catalyzed oxidations (K. B. Sharpless, UK).

Asymmetric cyclopalladation as a tool of enantioselective synthesis (V. I. Sokolov, USSR).

Palladium catalyzed synthesis of five-membered heterocycles (K. Utimoto, Japan).

Plenary lectures B will be:

Some uses of silicon compounds in organic synthesis (I. Fleming, UK).

The synthesis of heterocycles using transition metal reagents (L. S. Hegedus, USA).

Macrocycles in organometallic systems (J. M. Lehn, France).

Organometallic catalysis in asymmetric synthesis (P. Pino, Switzerland).

Vitamin B₁₂ and related cobalt complexes as catalysts in organic synthesis (R. Scheffold, Switzerland).

Selective reactions using organoaluminium reagents (H. Yamamoto, Japan).

Accommodation has been arranged in student residence halls or in hotels in or near Dijon. As the number of vacancies is limited, early booking has been advised. The registration fee after 1 May, if places are still available, is FF 800. Dijon weather at the end of August is usually temperate, daytime temperatures of 13–23°C, and rainfall light and variable.

9th International Symposium on Microchemical Techniques (ISM'83), Amsterdam, Netherlands, 28 August–2 September 1983

The Symposium, the latest in a series of triennial conferences, will be held in the Mathematics Building of the University of Amsterdam. The scientific programme will consist of plenary and keynote lectures, and oral and poster presentations. Poster presentations are encouraged as affording the best opportunity for the exchange of know-how and experience. Oral presentations will be held in two parallel sessions. English is the working language of the Symposium.

The *plenary lectures* to be given are:

Analysis of microvolumes (surfaces, interfaces and thin films) (D. Hercules, USA).

Trends in elemental analysis of organic compounds (E. Kozłowsky, Poland).

Impact of chemometrics on micro and trace analysis (D. L. Massart, Belgium).

Microanalysis of biological samples (fluids) (J. A. F. de Silva, USA).

Keynote lectures will be:

Sampling and analysis of aerosols (F. Adams).

Sample treatment techniques for organic trace analysis (K. Ballschmiter).

Reference materials for ultra-trace analysis (R. Dams).

Elemental determination in coal (J. D. van der Laarse).

Sample treatment techniques for inorganic trace analysis (G. Tölg).

Microanalysis of biological samples (single cells) (T. J. Rink).

Application of chemometrics (B. Vandeginste).

Reference methods in ultra-trace analysis (H. Werner).

Oral and poster presentations of original and unpublished material will cover these fields:

Analysis of microvolumes (surfaces, interfaces and thin films).

Application of chemometrics.

Characterization and analysis of coal.

Environmental analysis.
 General inorganic micro and trace analysis.
 General organic micro and trace analysis.
 Instrumental techniques for micro and trace analysis.
 Microanalysis of biological samples (fluids).
 Microanalysis of biological samples (single cells).
 Microchemistry in material sciences.
 Reference materials for ultra-trace analysis.
 Reference methods in ultra-trace analysis.
 Sample treatment techniques for inorganic trace analysis.
 Sample treatment techniques for organic trace analysis.
 Sampling and analysis of aerosols.
 Trends in elemental analysis.

For the benefit of participants a number of rooms have been booked provisionally in the centre of Amsterdam, close to the University. Details will be given in the third circular. The registration fee will be approximately f 350.

6th International Symposium on Cationic Polymerization and related Processes, Ghent, Belgium, 30 August–2 September 1983

The lecture rooms of the Faculty of Sciences of the University of Ghent, Ledeganckstraat, Ghent, will be the venue for this Symposium. Participants will be accommodated in the nearby student hostel 'Fabiola' or in hotels. The scientific programme will consist of main lectures (45 min), lectures (20 min) and communications (10–15 min) in not more than two parallel sessions. The official language of the Symposium will be English.

The *main lectures* will be:

Copolymerization of conjugated dienes with isobutylene (S. Cesca, Italy).
 Recent progress in the design of new photo-initiators for cationic polymerization (J. V. Crivello, USA).
 Cationic polymerization and electrophilic reactions promoted by metal salts of strong acids (A. Gandini, France).
 Chemistry of the propagating species in cationic polymerization of vinyl compounds: living cationic polymerization and new polymer synthesis thereby (T. Higashimura, Japan).
 New telechelic prepolymers and net-works therefrom (J. P. Kennedy, USA).
 Mechanisms for photoinitiation of cationic polymerization (A. Ledwith, UK).
 Structures and reactivities in the ring-opening and vinyl cationic polymerizations: similarities and differences (St. Penczek, Poland).
 Propagation rate-constants for alkene polymerizations (P. H. Plesch, UK).
 The stability of active centres of cationic polymerization of heterocycles (V. Ponomarenko, USSR).
 Cationic polymerization and grafting initiated by high energy radiation (V. T. Stannett, USA).

Cationic polymerization of cyclosiloxanes: the various processes involved (G. Sauvet, France).
 Continued challenges in polysaccharide synthesis (C. Schuerch, USA).
 Effect of ring size and substitution in cationic lactam polymerization (J. Sebenda, Czechoslovakia).
 2,5-Poly-THF diyls via the anionic and cationic transformation of fully epoxidized 1,4-polybutadiene (S. Smith, USA).
 Novel approaches toward controlled cationic copolymer synthesis (R. Wondraczek, DDR).



Castle of the Counts, Ghent (photo courtesy of Stad Gent, Dienst Toerisme).

Subjects to be covered by the *lectures* and *communications* are:

Progress in cationic vinyl polymerization.
 Progress in cationic ring-opening polymerization.
 New initiators.
 Photo-initiated polymerizations.
 High energy radiation-initiated polymerization, electro-initiated polymerizations.
 Telechelic and functional polymers and oligomers by cationic techniques.
 Graft and block copolymers by cationic techniques.
 Cationic polymerizations leading to well defined polymer networks.
 Cationic degradation of polymers.
 Cationic transformations of polymer chains.

The weather in Ghent in September is usually sunny and mild (19–22°C) but showers are not unknown. The registration fee is BF. 4500 and late registration (after 1 May 1983) is possible although no guarantee for the organization of accommodation can be made.

International Conference on Fourier Transform Spectroscopy, Durham, UK, 5–9 September 1983

The Conference will cover all aspects of the theory, instrumentation and applications of Fourier transform interferometric spectroscopy in any part of the electromagnetic spectrum, but will exclude NMR spectroscopy. The Conference language will be English.

Invited papers to be given are:

Dispersive Fourier transform spectroscopy (J. R. Birch, UK).

Far infrared stratospheric studies (B. Carli, Italy).

Numerical enhancement of spectral resolution (J. Connes, France).

Very fast time resolved FTS (A. E. Costley, UK).

Mid and near infrared atmospheric and solar studies (L. Delbouille, Belgium).

Absolute radiometry (W. D. Duncan, UK).

Specimen sampling techniques (P. R. Griffiths, USA).

Instrumental and computational aspects of high resolution FTS (G. Guelachvili, France).

Time resolved studies of polymer kinetics (K. Holland-Moritz, FRG).

Surface studies (P. H. G. van Kasteren, Netherlands).

Biological studies (H. H. Mantsch, Canada).

Cryogenic spectrometers (J. C. Mather, USA).

The interpretation of high resolution spectra (I. Mills, UK).

Time resolved studies with field widened instruments (A. J. Steed, USA).

Chromatography FTS (W. Vidrine, USA).

Industrial applications of FTS (H. A. Willis, UK).

All contributed papers will be presented in poster sessions. A special feature of the Conference will be a reminiscent session one evening on which some of the pioneers of Fourier transform spectroscopy will discuss their personal experiences of the theoretical and experimental development of the technique. There will be an instrument exhibition supported by some of the major manufacturers of Fourier spectrometers and associated equipment.

The Conference will be held at the University of Durham. Accommodation will be available in two colleges of the University. The registration fee is £25 and the date for registration is 31 July 1983; after this date the fee is £35.

29th IUPAC Symposium on Macromolecules, Bucharest, Romania, 5–9 September 1983

The symposium will be held in the lecture rooms of Stefan Gheorghiu Academy, Bucharest, and will consist of four plenary lectures (60 min), 50 invited lectures (45 min) and 600 short communications or posters. Contributors are expected to make their presentations in English.

The *plenary lectures* to be presented are:

Symposium address (E. Ceausescu, Romania).

Conformations of macromolecules in condensed phases (P. J. Flory, USA).

Some recent developments in the study of amorphous polymers and networks (H. Benoit, France).

Unconventional radical polymerization (C. Simionescu, Romania).

The *invited lectures* will be presented in two parallel sessions, under the general headings — Synthesis and related matters, and Structure, properties processing, utilization, etc.

Accommodation will be available in a moderately priced hotel near the meeting halls, in student dormitories or in higher class hotels if required. Although September in Bucharest is usually fine and sunny, it is advisable to take a raincoat. The registration fee is US\$250.

International Conference on Phosphorus Chemistry, Nice, France, 5–9 September 1983

The Conference will be held in the lecture rooms of the Faculté de Droit et Sciences Economiques, avenue Emile-Henriot, Nice. It will cover all aspects of molecular phosphorus chemistry divided broadly, but not exclusively, into three themes:



Durham Cathedral (photo courtesy of the University of Durham).

New concepts, theoretical formalisms and techniques applied to bonding, structure, stereochemistry and reactivity in phosphorus chemistry.

New structural arrangements and reactivity patterns. New synthetic methods for phosphorus compounds. New synthetic methods using phosphorus-containing reagents or catalysts. Reaction mechanisms involving the phosphorus atom. Transient phosphorus intermediates. Activation methods (photochemistry, electrochemistry, etc.) applied to phosphorus compounds. Unusual coordination states : P(I), P(II), P(VI) and bonding patterns. Polyphosphorus compounds. New phosphorus ligands and metal complexes. Biologically important phosphorus compounds, natural and synthetic.

Applications of molecular phosphorus compounds in the fields of agriculture, nutrition, therapeutics, extraction, etc. Environmental phosphorus chemistry.

Two *mini-colloquia* will also be held:

Synthesis and properties of phospholes; Chemical analogy between isologous B, Si, P and S compounds.



Nice (photo courtesy of Ville de Nice — Service Photographique).

There are no plenary or session lectures in the scientific programme of this Conference, the organizers have preferred to cater for a larger than usual number of oral presentations (about 30 min) on topics of wide scope and general interest. Not more than two parallel sessions are envisaged. More specialized or preliminary results will be presented in poster sessions — considered to be a major part of the scientific programme. Presentations will be in English or French.

Registration should be made before 1 July 1983 with the full fee of 950 FF. Limited accommodation will be available in the student residence hall but otherwise intending participants must arrange their own hotel accommodation. It is usually warm (25–30°C) in Nice in September, cooler in the evenings, with a sea temperature of 23°C. Short storms can interrupt the normal sunshine.

7th International Conference on Crystal Growth, Stuttgart, FRG, 12–16 September 1982

The Conference will be held at the new congress centre 'Schwabenlandhalle' in Fellbach, 15 km east of the centre of Stuttgart, the state capital of Baden-Württemberg. The scientific programme will consist of general sessions (invited lectures and short communications of high current interest and originality), symposium sessions providing a review and in-depth discussion of work in selected fields, and poster sessions — the main format for presenting, discussing and exchanging new information. There will also be an exhibition. The Conference language will be English.

Invited papers for the general sessions will be:

Near-equilibrium growth of silicon by CVD (J. Bloem, Netherlands).

Investigation of crystal surfaces by scanning tunnelling microscopy (G. Binnig and H. Rohrer, Switzerland).

Growth of rare earth garnet crystals by the floating-zone method (S. Kimura, Japan).

Crystal growth progress and needs for optical communications (R. A. Laudise, USA).

Growth of large GaAs and InP crystals (J. W. Nielsen, USA).

Crucible-free methods of growing crystals from the melt (V. V. Osiko, USSR).

Advanced multilayer epitaxial structures (D. Shaw, USA).

Present status of flux growth (B. Wanklyn, UK).



Schwabenlandhallé, Fellbach.

There will be ten *symposia*, each with invited special lectures. The *topics* and *invited lectures* are:

SY-1. *Molecular mechanisms in nucleation and crystal growth*. The kinetic approach to nucleation (D. Kaischew); Progress in molecular mechanisms of crystal growth (B. Mutaftschiev).

SY-2. *Interface and surface structures*. Anisotropy of surface tension (V. V. Voronkov).

SY-3. *Crystalline photovoltaic materials*. Crystal growth of photovoltaic compound semiconductors (K. J. Bachmann); The dendritic web growth of silicon ribbon (R. Hopkins); TEM-observation of grain boundary structures in semiconductor materials (R. Rocher).

SY-4. *Defects in silicon*. Influence of lattice damage on diffusion (S. A. Proussin).

SY-5. *Crystal characterization by diffraction methods*. Topographic studies of growth defects using synchrotron radiation (M. C. Robert); Characterization of crystals by X-ray and neutron diffraction methods (J. R. Schneider); X-ray topographic investigations of phase transitions in crystals (H. Klapper).

SY-6. *Convective transport in crystal growth on earth and in space*. Convective transport in melt growth systems (D. T. J. Hurley); Influence of convection on the growth of crystals from solution (W. R. Wilcox); Convective transport in vapour growth systems (G. H. Westphal); Fluid dynamics of classes of crystal growth nutrients (F. Rosenberger and G. Müller).

SY-7. *Organic Crystals*. High-resolution electron microscopy of structural defects in organic crystals (T. Kobayashi, Y. Fujiyoshi and N. Uyeda); Preparation and characterization of high-purity organic crystals (G. J. Sloan).

SY-8. *Automation in crystal growth*. Control of silicon ribbon growth (T. Surek); A measurement and control system for Czochralski growth (W. Uelhoff); Stability analysis and automation of crystal growth from melt (V. R. Tatarchenko).

SY-9. *Advanced epitaxy*. Low pressure chemical vapour deposition (J. P. Duchemin); Graphoepitaxy (H. I. Smith); Present state of liquid phase electro epitaxy (F. A. Kuznetsov).

SY-10. *Growth of mixed crystals, solid solutions, alloys*. Immiscibility and spinodal decomposition in III-V alloys (G. B. Stringfellow); Oxide solid solutions, crystal growth and applications (H. J. Scheel and P. Günther); Growth properties and applications of HgCdTe (J. C. Schmidt).

Although abstracts and manuscripts of contributed papers should have been submitted by 1 March 1983 there is provision for 'Late News' contributions of outstanding interest, to be submitted up till 15 August. Registration before 1 August entails a fee of DM 240, after 1 August DM 260. Accommodation should be booked in hotels by 1 August to guarantee a reservation.

At the time of the Conference, temperatures will range from 18–23°C (day) to 10–15°C (night) and there may be some rain showers.

International Conference on the Applications of the Mössbauer Effect, Alma-Ata, USSR, 26 September–1 October 1983

The Conference will be held in the Conference Hall of the Academy of Sciences of the Kazakh SSR, Alma-Ata. The working languages will be Russian and English, simultaneous translations being provided for plenary and section sessions. Plenary lectures (45 min), oral contributed papers (20 min) and poster presentations will cover the topics:

Emission Mössbauer spectroscopy and after effects of nuclear transformations; Amorphous materials; Biological systems and model compounds; Chemical structure and bonding; Geology, mineralogy and cosmochemistry; Lattice dynamics, phase transformations and critical phenomena; Properties of magnetic materials; Hyperfine interactions and problems of magnetism; Metals and alloys; Progress in methodology; Unconventional applications; Radiation damage and defect structures; Relaxation effects; Applications; Liquid crystals; Surface phenomena and catalysis.

The *plenary lectures* to be given are:

Emission Mössbauer spectroscopy and after effects of nuclear transformation (P. Imbert, France).

Amorphous materials (G. M. Kalvius, FRG).

Geology, mineralogy and cosmochemistry (J. Danon, Brazil).

Dynamics of proteins (F. Parak, FRG).

Rayleigh scattering of Mössbauer γ -rays in disordered systems (G. Albanese, Italy).

^{169}Tm Mössbauer spectroscopy of intermetallic Tm layer phase compounds (P. C. M. Gubbens, Netherlands).

Metals and alloys (U. Gonser, FRG).

Coherent transient effects in Mössbauer spectroscopy (T. Katila, Finland).

Radiation damage and defect structures (Sh. Sh. Ibragimov, USSR).

Relaxation effects (A. M. Afanas'ev, USSR).

Surface phenomena and catalysis (H. Topsøe, Denmark).

Protein dynamics studied by Rayleigh scattering of Mössbauer radiation (V. I. Goldanskii, USSR).

Amorphous structures produced by ion implantation (I. Dezsi, Hungary).

Mössbauer spectroscopy of implanted atoms (R. Coussement, Belgium).

Conversion Mössbauer spectroscopy (Ts. Bonchev, Bulgaria).

Interface magnetism and multilayered films (T. Shinjo, Japan).

The registration fee of US\$110 is payable in two portions: the first US\$30 to be paid by 15 July 1983, the remaining US\$80 at the registration desk in Alma-Ata. Travel and accommodation arrangements should be completed before 15 July 1983 through In-tourist, the foreign travel company of USSR. A visa should be applied for in good time.

Alma-Ata, the capital of the Kazakh SSR, is about 1000 m up in the mountains but in September usually enjoys warm and sunny weather (18–23°C). Time difference is +6 h from GMT.

11th International Conference on Organometallic Chemistry, Pine Mountain, USA, 10–14 October 1983

The Conference will be held at Callaway Gardens in Pine Mountain, Georgia. Callaway Gardens is 60 miles south of Atlanta Airport and comprises some 12,000 acres of gardens and woods. So that participants can take full advantage of the facilities, the scientific programme has been arranged to leave the afternoons free. The programme embraces all phases of organometallic chemistry with five plenary lectures, ten session lectures and about 135 contributed papers and 90 poster presentations. After each main lecture three parallel sessions will be run. The official language will be English.

The *plenary lectures* to be given are:

Transformation of organic compounds mediated by transition metal complexes (R. Bergman, USA).
New developments in the organometallic chemistry of groups IV–VI transition metals (M. L. H. Green, UK).

Titanium carbenes and metallocycles in synthesis and catalysis (R. Grubbs, USA).

Organocopper reagents in organic synthesis (J. Normant, France).

Remarkable structures of lithium compounds (P. Schleyer, FRG).

Session lectures will be:

Alkyl and hydride migrations of organometallic complexes on the early transition metals (J. Bercaw).

Reactive intermediates in organotransition metal chemistry (J. Cooper).

Mechanistic and synthetic aspects of organometallic oxidative additions (J. Eisch).

Reactive organometallic compounds from metallocenes (K. Jonas).

Organic chemistry of polynuclear metal centres (S. A. R. Knox).

Homogeneous asymmetric catalysis by means of chiral rhodium complexes (I. Ojima).

Metal atom photochemistry (G. A. Ozin).

Transformations of organoiron complexes of synthetic and chemical interest (M. Rosenblum).

Reactive intermediates in organometallic chemistry of the IV B group (J. Satgé).

Divalent and multiply bonded silicon compounds (R. West).

Pre-registration and housing reservations by 1 August 1983 are strongly advised. Accommodation will be available in villas, rooms in the lodge (both adjacent to the Conference Centre) and cottages. The registration fee before 1 August will be US\$125, after 1 August US\$150. The weather should be pleasant with temperatures ranging from 13°C at night to 27°C during the day.

Corrections

In our description of the 6th International Symposium on Plasma Chemistry, Montreal, Canada, in *Chemistry International*, 1983, No. 2, we omitted to record that Dr. G. Turban comes from France and wrongly attributed Prof. Polak to USA whereas, in fact, he comes from USSR. We apologise to both these gentlemen.

UNESCO-IOCD Seminar on Photochemical Conversions

This Seminar, to be held in Lausanne, Switzerland, 15–17 June 1983, will present a concise and comprehensive view of photobiological, photochemical and photophysical processes known and used for experiments on solar energy conversion. There are nine plenary lectures with plenty of time planned for questions, and public and private discussions. Correspondence concerning the programme should be addressed to Dr. A. M. Braun, Institut de Chimie Physique, EPFL–Ecublens, CH–1015 Lausanne, Switzerland. Registration, accommodation and tourist information are being dealt with by Lausanne Tourist Office, Convention Department, P.O. Box 248, CH–1006 Lausanne, Switzerland.

Proceedings of 8th International Meeting of Chemical Society Presidents

The meeting was held in Belgrade, Yugoslavia, in Autumn 1981. The full Proceedings have now been published by the Union of Yugoslav Chemical Societies in time to be available for the 9th Meeting to be held in Denmark in 1983. Enquiries should be made to the Union of Yugoslav Chemical Societies, 1100 Beograd, Karnegijeva 4, Yugoslavia.

An annotated bibliography on accuracy in measurement

The Comité International des Poids et Mesures has made a study on the problems associated with the evaluation and presentation of uncertainties of the results of measurement. It was clear from that study that there was no uniformity of opinion with regard to the major questions raised. As a contribution to the continuing discussions this Annotated Bibliography on Accuracy in Measurement was prepared. The Bibliography does not take any particular position with regard to the proper meaning or interpretation or application of accuracy in measurement. The Bibliography is primarily directed at those scientists who wish to review the most significant contributions made over many years on the subject of accuracy in measurement. Large treatises dealing with statistics and statistical analysis have not been included. It can be argued that accuracy is not basically a statistical phenomena, even though it is agreed that the investigation of measurement error and the determination of the magnitude of errors cannot be accomplished unless the measurement system is under statistical control. Rather accuracy, in some ways, touches upon, perhaps profoundly, the basic philosophical questions that surround the measurement process itself.

This Commission I.4 report will be published in *Pure and Applied Chemistry*, Vol. 55, No. 6, pp. 907-930 (1983).

Methods for the determination of fissile and fertile elements: Basic data of interest for the spectrophotometric determination of thorium

To provide a comprehensive analytical support to nuclear fuel programmes, methods must be available for the determination of fissile and fertile elements over four decades of concentration, to cover the range from prospecting to final assay of the pure products.

Commission V.7, after reviewing the analytical chemistry of uranium and thorium, decided that the basic data relevant to the different methods of analysis of thorium needed to be compiled. This report deals with the spectrophotometric determination of thorium and lists those chromogenic reagents reported from 1967 to the end of April 1981 but not

covered by the major literature sources. Fifty-four reagents are listed; a high proportion contain an arsenazo group and show higher selectivity and allow determination in strong acid media. Even with these reagents, high concentrations of tri- and quadri-valent ions lead to interference. Among the separation methods, the sequential use of two anion exchange columns involving nitrate and chloride systems provide the best results.

This report, by Commission V.7, is expected to be published in *Pure and Applied Chemistry* in July 1983.

Interphases in systems of conducting phases (*Provisional*)

The document is an Appendix to the *Manual of Symbols and Terminology for Physicochemical Quantities and Units* [*Pure and Appl. Chem.*, Vol. 21, No. 1, pp. 1-44 (1970)]. Together with the other appendices, notably that on *Electrochemical Nomenclature* [*Pure and Appl. Chem.*, Vol. 37, No. 4, pp. 499-516 (1974)], it expands the recommendations for nomenclature in the region of interphases containing charged particles.

After suggesting terms for the description of the interphase itself, there are sections outlining nomenclature for electric potentials at free surfaces (a condensed phase in contact with vacuum or dilute gas) and in interphases (the boundary between two dense phases). These include a discussion of the electronic work function and the Volta (or contact) potential difference. Interphases between metals, semiconductors and electrolytes are discussed. Nomenclature for the thermodynamic properties of the interphase at equilibrium is recommended including capacities and components of charge.

Quantities related to the description of the structure of the interphase are discussed and terms consistent with the present knowledge of this structure are recommended for the situations of the adsorption or absence of adsorption of ions or molecules and the possibility of partial charge transfer. Some general remarks are made about adsorption isotherms.

The report concludes with some recommendations for the nomenclature of the mechanical properties of solid surface.

It is recognized that although the report is fairly detailed, it is only a first step in establishing consistent nomenclature in this region of the subject. Future reports will be necessary as knowledge of the subject expands.

The report was prepared for Commission I.3 by Prof. S. Trasatti and Dr. R. Parsons. Comments should be sent either to the former at: Istituta di Elettrochimica e Metallurgia, Via Venezian 21, 20133 Milano, Italy, or to the latter at: Laboratoire d'Electrochimie Interfaciale du CNRS, 1 Place Aristide Briand, 92190 Meudon, France, within eight months of the date of publication in *Pure and Applied Chemistry*, expected in late 1983.

IUPAC CONFERENCES

Additional information from address in parentheses

1983

IUPAC CONGRESS

June 4 - 12. 29th International Congress of Pure & Applied Chemistry. Cologne, Federal Republic of Germany.

(General Secretariat of the 29th IUPAC Congress, Dr. W. Fritsche, c/o Gesellschaft Deutscher Chemiker, P.O. Box 900440, D-6000 Frankfurt/M 90, Federal Republic of Germany.)

BIOINORGANIC CHEMISTRY

June 13 - 17. 1st International Conference on Bioinorganic Chemistry. Florence, Italy.

(Prof. A. Scozzafava, Istituto di Chimica Generale, Facoltà di Farmacia, Via G. Capponi 7, 50121 Florence, Italy.)

ZIRCONIA TECHNOLOGY

June 21 - 23. 2nd International Conference in the Science and Technology of Zirconia (ZIRCONIA-83). Stuttgart, Federal Republic of Germany.

(Nils Claussen, Max-Planck-Institut für Metallforschung, Institut für Werkstoffwissenschaften, Heisenberstraße 5, D-700 Stuttgart 80, Federal Republic of Germany.)

SPECTROSCOPY

June 26 - July 1. 23rd Colloquium Spectroscopicum Internationale. Amsterdam, The Netherlands.

(23rd CSI, c/o Organisatie Bureau Amsterdam BV, Europaplein, 1078 GZ Amsterdam, The Netherlands.)

PROPERTIES OF COPOLYMERS

July 11 - 14. 24th Prague Microsymposium: Copolymers, Structure and Solution Properties. Prague, Czechoslovakia.

(Dr. P. Kratochvíl, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

BORON CHEMISTRY

July 11 - 15. Imeboron V (Organic and Inorganic). Swansea, Wales, UK.

(Prof. A. Pelter, Department of Chemistry, University College of Swansea, Singleton Park, Swansea, West Glamorgan SA2 8PP, UK.)

ANALYTICAL CHEMISTRY

July 17 - 23. SAC 83 Conference and Exhibition. Organized by the Analytical Division of the Royal Society of Chemistry, University of Edinburgh, Edinburgh, UK.

(Dr. J. M. Ottaway, Department of Pure & Applied Chemistry, University of Strathclyde, Cathedral Street, Glasgow G1 1X1, UK.)

POLYMER STABILITY & PROCESSING

July 18 - 21. 25th Prague Microsymposium: Processing and Long-Term Stabilities of Hydrocarbon Polymers. Prague, Czechoslovakia.

(Dr. J. Pospíšil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

TOXICOLOGY OF METALS

July 20 - 23. 2nd International Symposium on Clinical Chemistry and Chemical Toxicology of Metals. Montreal, Canada.

(Dr. J. Savory, University of Virginia Medical Center, Department of Pathology, Box 168, Clinical Laboratories, Charlottesville, VA 22908, USA.)

PLASMA CHEMISTRY

July 24 - 28. 6th International Symposium on Plasma Chemistry. Montreal, Canada.

(Prof. M. Boulos, Département de génie chimique, Faculté des sciences appliquées, Université de Sherbrooke, Sherbrooke, Québec, Canada J1K 2R1.)

IUPAC GENERAL ASSEMBLY

August 18 - 26. 32nd IUPAC General Assembly. Lyngby/Copenhagen, Denmark.

CHEMICAL EDUCATION

August 21 - 26. 7th International Conference on Chemical Education "Chemistry Education and Society". Montpellier, France.

(Prof. M. Chastrette, Laboratoire de Chimie Organique Physique, Université Lyon I, 43, Bld du 11 Novembre 1918, 6922 - Villeurbanne, France.)

HETEROCYCLIC CHEMISTRY

August 21 - 26. 9th International Congress of Heterocyclic Chemistry. Tokyo, Japan.

(Yuichi Kanaoka, Faculty of Pharmaceutical Sciences, Hokkaido University Sapporo, 060 Japan.)

ORGANOMETALLIC CHEMISTRY

August 28 - September 1. 2nd IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis. Dijon, France.

(Prof. J. Tirouflet, Université de Dijon, Boite Postale 138, 21004 Dijon Cedex, France.)

MICROCHEMICAL TECHNIQUES

August 28 - September 2. ISM '83, 9th International Symposium on Microchemical Techniques. Amsterdam, The Netherlands.

(Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam, The Netherlands.)

CATIONIC POLYMERIZATION

August 30 - September 2. 6th International Symposium on Cationic Polymerization and Related Processes. Belgium.

(Prof. E. Goethals, Institute of Organic Chemistry, Rijksuniversiteit-Gent, Krijgslaan 281 (S-4) B-9000 Ghent, Belgium.)

FOURIER TRANSFORM SPECTROSCOPY

September 5 - 9. International Conference on Fourier Transform Spectroscopy. Durham, UK.

(J.R. Birch, Division of Electrical Science, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK.)

MACROMOLECULES

September 5 - 9. 29th International Symposium on Macromolecules. Bucharest, Romania.
(Acad. Cristofor Simionescu, Institutul de Chimie Macromoleculară Petru Poni Aleea Grigore Ghica Vodă Nr. 41A, Iași, Romania.)

PHOSPHORUS CHEMISTRY

September 5 - 9. International Conference on Phosphorus Chemistry. Nice, France.
(Prof. J. G. Riess, Laboratoire de Chimie Minérale Moléculaire, Université de Nice, Parc Valrose, 06034 Nice, France.)

CRYSTAL GROWTH

September 12 - 16. 7th International Conference on Crystal Growth, ICCG-7. Stuttgart, FRG.
(Prof. Dr. M. Pilkuhn, Universität Stuttgart, Pfaffenwaldring 57, 7000 Stuttgart 80, FRG.)

MOSSBAUER EFFECT

September 26 - 30. International Conference on Applications of the Mossbauer Effect. Alma Ata, USSR.
(Prof. V. I. Goldanskii, Institute of Chemical Physics, Academy of Sciences of the USSR, Kosygin Street 4, Moscow 117977 SZD 1, USSR.)

ORGANOMETALLIC CHEMISTRY

October 10 - 14. 11th International Conference on Organometallic Chemistry. Pine Mountain, GA, USA.
(Dr. E. C. Ashby, School of Chemistry, Georgia Institute of Technology, Atlanta, GA 30332, USA.)

1984

BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.
(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.
(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.
(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

MEDICAL POLYMERS

July 9-12. 26th Prague Microsymposium on Macromolecules: Polymers in Medicine and Biology. Prague, Czechoslovakia.
(26th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.
(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

MACROMOLECULES

July 16-19. 27th Prague Microsymposium on Macromolecules: Physical Optics of Dynamic Phenomena and Processes in Macromolecular Systems. Prague, Czechoslovakia.
(27th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

ORGANIC CHEMISTRY

August. 7th IUPAC Conference on Physical Organic Chemistry. Auckland, New Zealand.
(Prof. B. R. Davis, Chemistry Department, University of Auckland, Private Bag, Auckland, New Zealand.)

CHEMICAL THERMODYNAMICS

August 13-17. Conference on Chemical Thermodynamics. Hamilton, Canada.
(Dr. P. A. G. O'Hare, Argonne National Laboratory, Chemical Technology Division, 9700 South Cass Avenue, Argonne, IL 60439, USA.)

RAMAN SPECTROSCOPY

August 26-September 1. 9th International Conference on Raman Spectroscopy. Tokyo, Japan.
(Prof. Mitsuo Tasumi, Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.)

REACTIVITY OF SOLIDS

August 27-September 1. 10th International Symposium on the Reactivity of Solids. Dijon, France.
(10e ISRS, Secrétariat Exécutif, Laboratoire de Réactivité des Solides, Faculté des Sciences Mirande, B.P. 138, F-21004 Dijon Cédex, France.)

1985

POLYMER ANALYSIS

February 11-14. POLYMER 85: Characterization and Analysis of Polymers. Melbourne, Australia.
(Dr. J. H. O'Donnell, Polymer & Radiation Group, Department of Chemistry, University of Queensland, Brisbane 4067, Australia.)

AROMATIC COMPOUNDS

July 15-19. 5th International Symposium on Novel Aromatic Compounds. St. Andrews, UK.
(Dr. P. J. Garratt, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK.)

MACROMOLECULES

August 18-23. 30th International Symposium on Macromolecules. The Hague, Netherlands.
(Dr. J. A. M. Smit, Gorlaeus Laboratories, University of Leiden, Department of Chemistry, P.O. Box 9502, NL - 2300 RA Leiden, Netherlands.)

MASS SPECTROMETRY

September 8-13. 10th International Symposium on Mass Spectrometry. Swansea, UK.
(Prof. J. H. Beynon, Royal Society Research Unit, University College of Swansea, Swansea SA2 8PP, UK.)

CHEMICAL RESOURCES OF THE OCEAN
September 22–28. Chemical Resources of the Global
Oceans — CHEMRAWN IV. Massachusetts, USA.
(J. R. Moore, Director, Marine Science Institute,
University of Texas, Austin, TX 78712, USA.)

1986

PESTICIDE CHEMISTRY

August 10–17. 6th International Pesticide Chemistry
Congress. Ottawa, Canada.
(Dr. H. V. Morley, London Research Station,
Agriculture Canada, University Sub-Post Office,
London, Ontario, Canada.)

PHYSICAL ORGANIC CHEMISTRY

August. 8th IUPAC Conference on Physical
Organic Chemistry. Tokyo, Japan.
(Prof. M. Oki, Department of Chemistry, Faculty of
Science, University of Tokyo, Tokyo 113, Japan.)

Commission Internationale des Industries Agricoles et Alimentaires

The International Commission for Food Industries produces a *Repertory of International Organizations Associated with Food Industries*. It is published every two years in French and English and is in two parts — inter-governmental organizations and non-governmental organizations; organizations within the framework of the European Economic Community do not appear in this document as they were included in a periodical issued by the EEC. The latest edition consists of 181 pages and costs 120 French francs. Further details may be obtained from the CIIA Secretariat, 35 rue du Général-Foy, 75008 Paris, France.

CNC-IUPAC Awards

The Canadian National Committee of IUPAC has established the CNC-IUPAC awards. The main purpose of these awards is to assist young scientists who are beginning to have an international impact on their field to participate actively in IUPAC-sponsored conferences, thus helping to further one of the aims of IUPAC, that of fostering international cooperation and of facilitating dissemination of the results of current research. The age of recipients is expected to lie in the range 35–42 years and each award will cover the expenses incurred in presenting a paper at an IUPAC conference outside North America. The first two winners will contribute papers at the 29th IUPAC Congress in Cologne in June 1983.

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PESTICIDE CHEMISTRY: HUMAN WELFARE & THE ENVIRONMENT

Proceedings of the 5th International Congress of Pesticide Chemistry, Kyoto, Japan, 29 August - 4 September 1982

Editors-in-Chief: **J MIYAMOTO**, Sumitomo Chemical Co Ltd, Takarazuka, Japan and **P C KEARNEY**, USDA, Beltsville, MD, USA

Editors: **P DOYLE**, ICI Plant Protection Division, Bracknell, Berks, UK, **T FUJITA**, Kyoto University, Japan, **N TAKAHASHI**, University of Tokyo, Japan, **S MATSUNAKA**, Kobe University, Japan, **D H HUTSON**, Shell Research Ltd, Sittingbourne, Kent, UK, **S D MURPHY**, University of Texas Medical School, Houston, USA, **R GREENHALGH**, Agriculture Canada, Ottawa, Ontario, Canada, **N DRESCHER**, BASF Aktiengesellschaft, Limburgerhof, Federal Republic of Germany



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Plenary Lectures: Political, economic and philosophical aspects of pesticide use for human welfare, **K H Büchel**. Pesticide research for the improvement of human welfare, **I J Graham-Bryce**. Synthesis of Pesticides and Growth Regulators: Stereoselective synthesis of pheromones via phosphonium ylides, **H J Bestmann**. Problems and opportunities with pheromones, **R Baker**. Chemical Structure and Biological Activity: Structure-activity relationships in derivatives of anticholinesterase insecticides, **T R Fukuto**. Sulfonylureas: new high potency herbicides, **G Levitt**.

Volume 2: Natural Products

Bioactive Natural Products: Chemistry, Biochemistry and Physiology: Biological activities and structures of host-selective pathotoxins, **J M Daly et al**. Endocrine strategies for insect control, **W S Bowers**. Pyrethroid Insecticides: Biological Activity, Mode of Action, Metabolism and Toxicology. Antibiotics for Agricultural Use. Herbicides and Plant Growth Regulators for Rice Cultures.

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The International Union of Pure and Applied Chemistry (IUPAC), formed in 1919, is a voluntary, non-governmental, non-profit association of organizations, each of which represents the chemists of a member country.

Its objectives are:

to promote continuing co-operation among the chemists of the member countries;

to study topics of international importance to pure and applied chemistry which need regulation, standardization, or codification;

to co-operate with other international organizations which deal with topics of a chemical nature;

to contribute to the advancement of pure and applied chemistry in all its aspects.

The membership of IUPAC presently comprises 44 countries, each represented by a national organization, such as an academy of science or research council.

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Chemistry International

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)



The President, Mrs Nagakura and
Dr. M. Williams in Tokyo, April 1983

CHEMISTRY INTERNATIONAL

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As this is the last issue of *Chemistry International* before the General Assembly it has a high proportion of space devoted to items that will be open to debate and decision at Lyngby. It would be invidious for me to attempt to classify these items in order of importance and I am not sure that the agenda for the Council meeting (p. 6) gives a lead. In the Secretary General's Column (pp. 2-5), Prof. Ourisson discusses some of the important items debated by the Executive Committee in preparation for the General Assembly and further details are given elsewhere on the proposals for affiliate membership (pp. 17-20), for the new dues scheme (pp. 20-23) and for the fate of some Commissions (pp. 7-10). High in importance must be the elections for new Officers and Bureau Members. We have attempted to give as similar details on each candidate as possible within the limits of time and information available. Any inequality of coverage reflects only on these limitations and certainly not on the merits of the candidates.

As a relief from the General Assembly, I commend the article by Dr. den Os, Chairman of the Committee on Publications, which has short satellite pieces on the new Editorial Advisory Board for *Chemistry International*, (CI) with my usual appeal for your opinions, and on *Pure and Applied Chemistry* — and a selection of much sought after reactions to the 1983 issues of CI. Finally, to take you away from IUPAC, you may be interested in an article on ICSU — the International Council of Scientific Unions — of which IUPAC is a founder member.

I sincerely hope that many, if not all, of you will receive this issue well before the General Assembly. We are all, at the Secretariat and Pergamon Press, making a special effort to that end.

Communication with the IUPAC Secretariat

On 1 September 1983, a new telephone system is being installed in the Secretariat. This will result in a change in the telephone number. The new number *provisionally* allocated is **717744**, replacing the existing 770125 and 772834. For three months calls on these old numbers will be intercepted and callers informed of the new number.

Part of the new system involves the installation of an answering service so that calls can be recorded in the office during the mid-day break or outside normal office opening times (*Chem. Int.*, 1983, No. 3, p. 12).

THE SECRETARY GENERAL'S COLUMN

The 102nd Meeting, April 1983, of the IUPAC Executive Committee (EC), invited to convene in Tokyo by President S. Nagakura, was devoted essentially to detailed preparation for the next General Assembly. The Agenda was a typical Williamsian masterpiece, comprising 13 major headings, 38 sub-headings and 25 further sub-sub-headings. I shall report on some of the most important points the EC has decided to recommend in Lyngby to the Bureau and the Council.

The Union has *members*, of various kinds, which must circulate *freely*; they work in *commissions* or at *symposia*, producing *documents* which must be published; the Union has to acquire and to spend *money*. These will be my successive headings. I shall intersperse a few personal comments.

The Membership of IUPAC

A deliberate effort has been pursued in recent years to improve the world coverage of the Union, in particular in Latin America, Africa and South-Asia. This shows steady progress. In Lyngby, the EC will recommend the acceptance of the application for membership of the Peruvian Chemical Society, and we shall welcome the participation, as observers, of representatives of the Chilean Chemical Society. I also happen to know that some of the young South-American chemists we had invited to our last General Assembly in Leuven, on a special ICSU-supported programme, are now working in their respective countries to establish permanent ties with IUPAC.

Another kind of members are the Associated Organizations, international scientific groups finding value in their recognition by IUPAC (and sometimes by other Unions as well), adhering to our general goal, but financially and administratively independent. In Lyngby, Associated Organization status will be recommended for the European Federation of Corrosion and the International Organization for Biotechnology and Bioengineering. It is clearly in the interests of IUPAC also to obtain such a cooperation, as we thereby gain access to essential expertise in important fields. Even though this was not discussed in Tokyo, I am now personally inclined to believe that Associated Organization status might provide the solution for some groups, with programmes which, despite their interest, we could not endorse, who have struggled for years — with



Prof. G. Ourisson, Secretary General.

very regrettable mounting antagonism — to obtain a special niche within IUPAC. The very important group of Medicinal Chemists, now partly seceded from IUPAC, might want to explore this possibility.

The hottest issue in respect to membership was, however, the Affiliate Membership Scheme. This would enable individual chemists to become "IUPAC Affiliates", but *only* (repeat *only*) through their National Chemical Society. The proposals, circulated to all National Adhering Organizations (NAOs), are reproduced on pp. 17–20 and are recommended by the EC. If this recommendation were accepted, it would represent a major change in the structure of the Union, comparable to — but probably still more important than — the introduction of Company Associates in 1966 or of Associated Organizations even earlier. It may be unwise, but I cannot refrain from a personal comment: the adoption, by an Assembly representing *corporate* members, of a

scheme designed to benefit *individual* members, will require a lot of vision! I hope our NAOs will show vision and confidence in themselves and in individual chemists.

Free Movement of Chemists

The "3 months/1 month" visa policy has, in the past, made it possible to ensure free participation of chemists in IUPAC-sponsored meetings even when these were held in countries maintaining no diplomatic relations with their own government: visas have to be applied for three months in advance, and any difficulty has to be reported to IUPAC one month before the meeting.

Some regrettable incidents involving *bona fide* chemists and biochemists have again occurred, visas having been refused by the USA and Australia, respectively. Had the "3 months/1 month" rule been followed, it would have been possible for IUPAC (and IUB) to intervene, but this was not the case. A new hurdle has indeed appeared in that some embassies/consulates are unwilling to accept visa applications 3 months ahead! In such cases, the Union must be informed at once if it is to intervene.

Another attempt to improve the situation would be the introduction of a new visa certificate issued by ICSU, to help in maintaining adequate pressure on "delinquent" authorities. The EC recommended adoption of this ICSU visa certificate (when it is finally established by ICSU), but *only* in exceptional cases, i.e. where difficulties can be anticipated, to avoid setting up a massive bureaucracy.

Obstacles to free circulation of chemists can accrue not only in those cases where visas are a problem: the economic conditions prevailing in the less developed countries are in many cases a more powerful impediment. The Union has taken various initiatives to try to overcome these problems. For instance, under the ICSU-supported programme mentioned above, in Lyngby it will again be possible financially to assist attendance by delegates from the NAOs of Cuba, Portugal, Turkey and Venezuela. The Executive Committee has also requested from ICSU a special grant to assist participants from Third World countries to CHEMRAWN III.

A somewhat related move has been for the EC to give support to ICSU's call to participants at the 2nd Special Disarmament Session of the UN General Assembly, to make every effort to stop the threat of nuclear war.

Commissions

Commissions are the working units of the Union. They used to comprise eight Titular Members, but the tight budgets of the past few years have made it necessary to reduce this number to six. Six members can do, on average, only 3/4 of the work of eight, but also it becomes in practice inordinately more difficult,

with a smaller membership, to ensure the scientific coverage *and* the geographical distribution *and* the presence of enough younger colleagues *and* the proper interactions, etc. The EC has nevertheless endorsed the conclusion of the Finance Committee, that the present financial prospects of the Union (see below) give no basis to propose, in Lyngby, the lifting of the restriction of membership to six. Possibly, in Lyon, in 1985 . . .

On the other hand, the EC has, after taking into account all comments received, resolved to recommend an amendment of the Bylaws to limit total normal service in IUPAC to twelve years; it will be proposed that the Bureau should adopt this amendment as a guidance, until, in 1985, it can be proposed as a new Bylaw to the Council in Lyons. The reason for this limitation is of course to ensure a constant rejuvenation of IUPAC bodies; I may be allowed to express my personal support to this resolution, having now served continuously for 22 years on various IUPAC bodies.

Finally, regarding work done by Commissions and Divisions, for the first time the EC has had, in good time, the critical assessment of IUPAC projects and programmes prepared by the Vice-President, as part of his recently defined duties. The Vice-President's report is now being circulated to the Bureau and NAOs. It was felt by the EC that such a biennial report, although inevitably open to criticisms, will soon be regarded as an essential exercise, one which should have been started many years ago! (See also pp. 7-10 on the "Suspended Commissions".)



Dr. Schneider relaxes after presenting his critical assessment.

Symposia and Congresses

The EC has examined in detail the programme of the on-going 29th Congress (Cologne, June 1983) and the tentative programme of the 30th Congress (Manchester, September 1985). It has offered the organizers of the 30th Congress some hopefully useful comments and has sought help from those of the 29th Congress to identify some of the difficulties they have apparently had, in setting up a truly international and coherent programme, so that these can be avoided in future. The EC has also considered the prospects for 1987 and will come up in Lyngby with specific proposals to Council. It is indeed quite satisfactory to note that despite the huge effort involved in the preparation of Congresses, the Union has always found willing candidates in time to organize them. I may have to get rid of my self-inflicted prejudice against these large meetings: I must be wrong, as so many people like them.

As for Symposia, they continue to be very popular. I refer you simply to the calendar published regularly in *Chemistry International*.

Publications

The gross royalties on IUPAC publications have practically remained stable in 1981 and 1982, at about US\$110,000. While the increase has been magnificent during the last ten years, and is in a way a measure of success, the EC has spent much time discussing possible improvements; the publishing scene is constantly changing. In Lyngby, the Bureau and Council will be presented with very important documents from the Publications Committee, the Divisional Presidents and the EC — suggestions to improve the distribution of Commission reports; present and future of "*Chemistry International*," the temporary part-time editor of which, Mr. R. W. Fennell, will be given a brand new Editorial Board representing Divisions and Standing Committees (see p. 35); relations with the proposed ICSU Press; status of the large scale projects: *Solubility Data Series* and *Stability Data Project*; measures to be taken to improve further the distribution of *Pure and Applied Chemistry*; organization of the Scientific Publications Secretariat in Oxford; involvement of IUPAC in Numerical/Data Bases; etc. (see also pp. 23–25).

Finances

The Finance Committee and the Treasurer are two essential elements of the finances of IUPAC; the third one is money.

The Finance Committee has at present a vacancy; it will be filled before Lyngby by a Japanese member appointed by President Nagakura. The present Treasurer, Dr. Graulich, will have to be replaced at Lyngby. It



Prof. Overberger listens to the discussion on the 1987 General Assembly.

was very reassuring to the EC that, despite the heavy load of work linked with the Treasurer-ship, several outstanding nominations have been obtained from which the Bureau will have to recommend one to the Council.

The financial situation of the Union is apparently satisfactory. In 1981, the surplus was \$15,000, and in 1982, where a surplus of \$21,500 had been budgeted, as in all non-Assembly years, this turned out to be much higher (\$76,000), due to a surplus on publications instead of the expected deficit. This is however offset by the draft budgets for 1984 and 1985, and the overall deficit (\$60,000) at present anticipated for the financial biennium 1983–1984.

The new dues structure adopted by Council at Leuven appears to find, generally speaking, progressive acceptance as being an improvement, of greater fairness, on the previous one. The EC has nevertheless examined carefully a UK proposal, refining the dues scheme. This proposal (see pp. 20–23) was endorsed by the EC by its only divided vote. It will be circulated to NAOs for discussion prior to the Lyngby meeting. May I again be permitted a personal comment? Nobody in IUPAC believes that a decision by Council will be considered by the various paying agencies as binding them to a higher level of payment; in most cases, these agencies define for themselves the limit of their *total* expenditure towards dues to the various Scientific Unions. The reference to chemical turnover has however, in many countries, the advantage of linking dues levels with an in-

dependently measured criterion, potentially giving a pseudo-rational ground for preferential financial support to IUPAC. I believe we must stick to this criterion, improve its use, and simultaneously continue to explore other ways of evaluating chemical activity in the various countries.

The alternative is alas clear, for instance in the budget of ICSU, where large Unions and miniscule ones are treated "equally", i.e. get the same basic allowance. Also, we must constantly bear in mind that our budgets are the products of an internal evolution, and could have developed as completely different structures; other Unions do in fact organize their expenses along totally different lines, e.g. commission meetings only at scientific symposia, at no cost to the Union; subventions to symposia; fellowship programmes; publication of primary journals by the Union; executive secretariat parasitic to a large institution; etc. I am not advocating copying any other Union, but we must be careful always to distinguish between what is necessary, what is convenient, what is customary, what is stereotyped, in our budgets as well as in all our other activities.



Prof. Perez-Masiá explains the Spanish proposals for a dues structure.



Coffee break. Prof. Michalski is on the left. Do you recognise the others?

32nd IUPAC COUNCIL MEETING

Lyngby, Denmark: 25–26 August 1983

AGENDA

1. Introductory Remarks and Finalization of Agenda
2. Approval of Minutes of 31st Council Meeting
3. Announcement of Nominations for Officers and Bureau Members
4. Announcement of Time of Elections
5. Statutory Report of President on State of Union
6. Biennial Report of Treasurer
7. Report of Finance Committee
8. Tentative Budgets for 1984 and 1985
9. Revised New Dues Structure and Fixing Annual Dues for 1984 and 1985
10. Applications for Membership of IUPAC
11. Applications for Associated Organization Status
12. Reports of Division Presidents
13. Report of Committee on Publications
14. Report of CHEMRAWN Committee
15. Language for Official Records during 1983–1987 (Statute 5.405)
16. Proposed Changes to Statutes and Bylaws
17. Proposed Affiliate Membership Scheme
18. Proposals Formally Received from National Adhering Organizations
19. Adoption of Recommendations on Nomenclature and Symbols
20. Proposals for New Bodies and Dissolution of Existing Bodies
21. Ratification of Decisions taken by Bureau and Executive Committee since 31st General Assembly
22. Important Matters Discussed by Bureau at 32nd General Assembly not Covered by Items on Council Agenda
23. Elections
24. Ratification of Dates and Place of 33rd General Assembly and 30th Congress
25. Provisional Place of 34th General Assembly and 31st Congress
26. Any Other Business (discussion only)

To be or not to be? The suspended Commissions

At the General Assembly at Leuven (1981) it was agreed that each IUPAC Vice-President should be given the task of making a critical assessment of the programmes of all Divisions, Commissions and executive Standing Committees of the Union. Dr. Schneider's report has been circulated to the Bureau and National Adhering Organizations and will not be reproduced here. However, there were five Commissions suspended at the Leuven General Assembly and it was thought that the part of the report dealing with these Commissions could be of more immediate general interest; the relevant sections have therefore been extracted from the report.

IV. REPORTS ON COMMISSIONS SUSPENDED IN 1981

(a) *Commission on Medicinal Chemistry (III.4)*

Decision

At the 1981 General Assembly and the Bureau meeting it was decided that Commission III.4 (Medicinal Chemistry) will be suspended after the General Assembly 1981, and that the Organic Chemistry Division Committee be asked to propose a working group with membership and terms of reference similar to those investigating Commissions VI.4 and VI.6 (see below). However contacts of the working group with IUPHAR are welcomed.

Action

A three-member study group consisting of Dr. J. F. Cavalla, Prof. J. Mathieu and Prof. H. Musso was appointed by IUPAC.

The group held its first meeting in Paris, 17 November, 1981, at which it reviewed the program of Commission III.4 and considered other topics a reconstituted Commission might address. The group also concluded, "The biological part is important in Medicinal Chemistry but should not overflow the chemical part," and "Commission III.4 should be more international in its activity and its composition."

A second meeting was to be held on 30 March, 1982, but was later postponed.

In June 1982 at a meeting in Toronto the members of Commission III.4 resigned and formed a new "International Committee on Medicinal Chemistry (ICMC)" with a view to establishing a new international organization on medicinal chemistry, and hopefully also some cooperative relationship with IUPHAR. Possible discussions with IUPAC on future collaboration were not excluded.

At its meeting in September 1982 in Prague the Bureau decided to suspend the existing membership of Commission III.4 and to discontinue the present Working Group. The Organic Chemistry Division was asked to review the situation, and if warranted, to submit a new proposal on Medicinal Chemistry.

Comment

The central issue which has hampered progress by the Working Group appears to be the insistence of the present Commission III.4 members to maintain their existing terms of reference which were formulated when the Commission was first established as a Section within IUPAC in 1969. These terms of reference, which appear more appropriate for an international society for medicinal chemistry, are in part incompatible with those for an IUPAC Commission following the Guidelines for IUPAC Projects. This disagreement on the role of the Commission has led to regrettable recriminations and difficult communication with the Working Group.

Under the circumstances if the Commission on Medicinal Chemistry is to be reconstituted it will have to be rebuilt from the ground up with new terms of reference, new membership and a viable work program consistent with IUPAC guidelines.

Recommendation

In the event that a convincing case is made to the Bureau by the Organic Chemistry Division to reconstitute the Commission on Medicinal Chemistry, it is recommended that a new Working Group be constituted and that it be tasked with carrying out consultations with relevant organizations in medicinal chemistry, and with COCI, IUPHAR and IUB, and preparing a detailed proposal for consideration by the Bureau. The members of the Working Group should be carefully selected, for, in addition to high scientific qualifications, some diplomatic and negotiating skills would be helpful.

(b) *Commission on Analytical Radiochemistry and Nuclear Materials (V.7)*

Decision

The 1981 decision by the General Assembly and by the Bureau was that the Commission on Analytical Radiochemistry and Nuclear Materials shall be suspended and that the Analytical Chemistry Division be asked to propose a working group with membership and terms of reference similar to those investigating Commissions VI.4 and VI.6.

Action

In response to the above directives the Analytical Division constituted a four-member Working Group as follows:

Prof. Dr. M. Grasserbauer (Chairman)
Prof. Dr. E. Roth (Inorganic Chemistry Division)
Prof. Dr. E. Steinnes (Commission V.7)
Dr. M. deBruin (Commission V.7)

At a meeting on 24 April, 1982, the Working Group concluded unanimously that Radiochemistry and Nuclear Techniques are modern and still expanding fields for which there is a definite need of unification, standardization, codification and transfer of information from specialized national and international bodies to the chemical community. Seven of the most important topic areas were identified and the Group gave a reasonable rationale why these should be undertaken by IUPAC. The Group concluded further that because of the multidisciplinary nature of these topics, the new Commission should be a Joint or Interdivisional Commission.

At a second meeting, held on 17 December, 1982, the Working Group reaffirmed the above conclusions, suggested the name of the new Commission be "Commission on Radiochemistry and Nuclear Techniques," and identified a number of projects for an initial work program.

Comment

The conclusions and recommendations of the Working Group are convincing and reasonable.

It should be noted that IUPAC interest in nuclear and radiochemistry has had a long history. At an IUPAC Bureau meeting of 31 August, 1973, the following proposal drafted by a previous meeting of Division Presidents was considered:

"that an ad hoc Committee on Nuclear and Radiochemistry of five persons be appointed immediately, with a view to creating in 1975 a Commission on Nuclear and Radiochemistry, inter-disciplinary in nature but for administrative purposes to be attached to the Inorganic Chemistry Division."

The proposal was approved by the Bureau. The membership of the ad hoc Committee was approved by the Bureau at its meeting in August 1974. A program of projects was developed by the ad hoc Committee, which was discussed at successive meetings of Division Presidents and the Bureau. After the death of the Chairman of the ad hoc Committee, the proposal seemed to have lost momentum, and Commission V.7 agreed to enlarge its terms of reference to include additional topics in nuclear chemistry. During this period a proposal for a Commission on Radiation Chemistry was also being considered. By 1981 both proposals appear to have been dropped from active consideration.

With the new proposal of the Working Group for V.7 we seem to have come full circle. In the previous round of discussion of a Nuclear and Radiochemistry Commission it was considered that an interdisciplinary Commission reporting directly to the Bureau was administratively unworkable. What is being proposed in the present assessment report is an interdivisional Commission in which one Division

acts as a "lead Division" to which the Commission reports. In turn the "lead Division" is responsible to the Bureau for the performance and functioning of the Commission. In this way, hopefully, the perceived obstacles to an "interdisciplinary" Commission could be overcome.

It should be noted that the 1973 proposal above had, in fact, anticipated such a structure, and that the new Commission "for administrative purposes be attached to the Inorganic Chemistry Division." Accordingly, it will now be incumbent on the Inorganic Chemistry Division to review its position and possible interest with respect to the present proposal. If the Division has a strong interest it would also have to be considered as a candidate for "lead Division" for the proposed new Commission.

Recommendation

It is recommended that the Analytical Chemistry Division be designated as "lead" Division for a new Interdivisional Commission on Radiochemistry and Nuclear Techniques, that the Division Committee hold consultations with other interested Divisions, and in concert with these Divisions appoints a representative Task Group to draw up a detailed proposal for the new Commission.

(c) *Applied Chemistry Division: Commissions VI.4, VI.6 and VI.7*

Decision

The decision respecting the above Commissions taken at the 1981 IUPAC General Assembly was: "Activities of Commission VI.4 (Atmospheric Environment), VI.6 (Water Quality) and VI.7 (Reclamation of Solid Wastes) will be *suspended* after the General Assembly 1981. The Applied Chemistry Division Committee is asked to propose three respective working groups to the new President of the Union. The working groups should consist of 3 (if necessary and specifically argued 4) members; one of them should be an internationally known expert in the field who has not worked in the respective Commission now or in the past. It is recommended that another member is a Division Committee member. The working groups should investigate if there is a relatively small number of new and present projects which fulfil the Guidelines for IUPAC Projects (1981). If so, precise projects should be formulated and discussed by the Division. The Division Committee is asked to send these projects and a proposal in which it is explained whether the respective Commission should be re-established (or not), including proposals for Commission Officers, at the General Assembly 1983."

Action

The Applied Chemistry Division (ACD) set up three Working Groups as follows:

Atmospheric Environment (VI.4)

Prof. J. Calvert — NCAR, Boulder, Colorado
Dr. H. Egan — ACD
Mr. Luxon — ACD
Dr. Kearney — ACD
Mr. Leichnitz — Chairman VI.4

Water Quality VI.6

Prof. Malz — Emschergerossenschaft, Essen, FRG

Dr. Coles — ACD

Mr. Schjødtz-Hansen — Chairman VI.6

Solid Wastes (VI.7)

Dr. P. Brunner-Eidgen — Anst. f.

Wasserversorgung, Switzerland

Prof. Naudet — ACD

Mr. Lindfors — Sec., VI.7

Following the studies of the three Working Groups the Applied Chemistry Division prepared a consolidated report outlining the Division's proposals with respect to the three suspended Commissions. The following conclusions and recommendations are summarized from the Division VI report.

Atmospheric Environment (VI.4)

The first issue addressed by the Working Group was whether there is a current need to re-establish this commission or a commission with slightly modified objectives in IUPAC. Following a survey of current atmospheric research and some activities of the former commission the working group concluded the answer is yes, and strongly recommends that a new "Commission on Atmospheric Chemistry" be established in IUPAC. In justifying this recommendation, the working group cite: (i) the continuing international concern about atmospheric trace gases and aerosol species on the environment, (ii) that research on atmospheric environment is an international activity in chemistry that should be part of IUPAC, and (iii) rapid advances in trace gas analysis and studies on the kinetics of photochemical atmospheric reactions.

Seven projects are proposed as follows:

- I. Inventory of current tropospheric sampling programs world-wide
- II. Evaluate current knowledge on important tropospheric trace gas concentrations world-wide and identify needs for additional measurements
- III. In cooperation with scientific representatives from various countries propose additional sampling sites
- IV. Review of existing instrumental methods of analysis of selected tropospheric trace gases
- V. Workshops for scientific personnel involved in making measurements in the global sampling network to ensure equivalent standards and comparability of measurements
- VI. A central data analysis group to collect, collate and analyse data from the network and distribute the data to participating laboratories
- VII. Identification and study of trace gas and aerosol problems requiring further investigation in the industrial or laboratory environment

The Working Group also provided a list of names of chemists active in this area and from which the membership for the new Commission on Atmospheric Chemistry could be drawn.

Comment

The proposal of the Working Group for a new reconstituted Commission represents a considerable shift of emphasis from the previous Commission VI.4, with greater emphasis on atmospheric chemistry and less on chemistry of gases and hazardous materials in the work place. The justification for, and the importance of an IUPAC program in this area are convincing, and there is no doubt that the program must be international in scope and would benefit from having a non-political and scientifically credible international base such as IUPAC. Given this shift of program emphasis there would seem to be no compelling reason for the new Commission to be included in the Applied Chemistry Division more so than in, say, the Analytical or the Physical Chemistry Divisions. However, this consideration would seem to be secondary to the most essential requirement, that of recruiting the top international experts active in this field as members of the new Commission. If this can be achieved there seems little doubt the new Commission could develop a strong and viable program.

Water Quality (VI.6)

In addressing the question whether there is a current need for a commission on water quality, the Working Group is of the opinion that "it is much more difficult to find arguments to explain why IUPAC should *not* be involved in water quality problems than to explain why IUPAC should be involved." Water is a resource of major importance world-wide, and the goal of safe drinking water supply and sanitation for every citizen in the world by 1990, cannot be achieved or approached without considerable efforts through chemical science and technology. Any examination of water quality implies chemical analyses and an understanding of chemical processes. Water chemistry is a large and growing discipline involving an increasing number of chemists world-wide. Many water quality problems are related to chemical industry or to products manufactured in chemical industry. Treatment of water and waste water implies physico-chemical unit operations and chemical processes. IUPAC, as an international organization, including representation from industry, government and universities, is considered a proper platform for a sound analysis of chemistry and chemicals relative to water quality, with a responsibility to disseminate this information together with information on environmental concerns.

The Working Group concludes that IUPAC should continue its involvement with water quality problems within the Applied Chemistry Division (as well as in other Divisions). It recommended that a *new Commission* be established to be entitled "Commission on Water Chemistry" (or Commission on Water and Solid Waste Chemistry). If a new Commission on Solid Wastes is not established (see below) it is recommended that the new Commission on Water Chemistry should include aspects of solid waste problems. The Working Group is not in favour of a possible amalgamated "Environment Commission" within ACD, which might cover the water/air/soil interdependent environmental problems. In spite of their inter-relatedness, the Working Group feels

that "the main force of a Commission is that it consists of members with high expertise in a reasonably limited scientific field rather than a group of generalists." Nevertheless, they state that close contact should be established between Commissions dealing with environmental problems. Cooperation between the new Water Chemistry Commission and other international organizations involved in water problems should be promoted, e.g. COWAR (Committee on Water Research) sponsored jointly by ICSU (International Council of Scientific Unions) and UATI (Union of International Engineering Organizations) and ISO (International Standards Organization).

For the initial work program of the new Commission, the Working Group identified a number of priorities: (i) water treatment for supply and irrigation, (ii) industrial wastewater treatment and sludge disposal, and (iii) receiving waters (aquifers, rivers, lakes, etc.). Emphasis should also be given to the chemistry of precipitation, sewage treatment and sludge disposal, renovation of chemical waste dumps, improvement of brackish water for drinking water in developing countries and treatment of non-biodegradable materials in waste water. Other specific projects identified are cooperation with the WHO-Global Environmental Monitoring Systems (GEMS), unit operations for treatment of special compounds and for combined treatment of industrial and domestic sewage, multifunctional type tests for treatability of sewage and waste waters and analytical quality control methods (in cooperation with WHO).

Because of the more diversified program of the proposed new Commission, its membership will also need to be more diversified. A short list of possible members was included.

Comment

The case made by the Working Group for continued IUPAC involvement in water quality and water chemistry and technology is persuasive. The range of water related problems proposed for the new Commission is considerably broader than that of the existing Commission. While this could improve the likelihood of a strong and viable program, care will have to be exercised that the program will initially also be sufficiently selective to be manageable with available resources. The program could also include some projects (in cooperation with UN agencies) of interest to developing countries. In that event consideration should be given to having appropriate representation from developing countries in the membership of the new Commission. Cooperation with COWAR would seem possible since that organization has funding available, but is evidently bankrupt of good project ideas on which to spend

funds. Finally, it should be mentioned that as currently planned CHEMRAWN VI is to deal with the topic "Chemistry and Technology of Water and Waste Water" and would seem to offer a beneficial symbiotic relationship with the proposed program area of the new Commission.

Reclamation of Solid Wastes (VI.7)

The Working Group on Reclamation of Solid Wastes has concluded that there is no need for a Commission on Solid Wastes. They cite the following reasons:

Many international organizations cover the field of waste management; some of them are well suited to set rules for standardization and unification of methods and waste products.

Decisions in waste reclamation are primarily based on economic considerations. Chemical aspects are of secondary importance.

When it comes to solve particular chemical problems in waste management, solutions from other fields are usually available and can be adapted and applied to solid wastes.

The above points do not make it seem necessary to have an IUPAC Commission on Reclamation of Solid Wastes. However, most of the problems related to Solid Wastes concern, in fact, water and its pollution, and, therefore, could be studied by a Commission on Water Chemistry. For this reason it was felt that inclusion of specialists on water pollution among the membership of the proposed Commission on Water Chemistry would be desirable.

Comment

It may be worth noting that the Commission on Biotechnology (VI.2) will almost certainly also become involved in some problems of solid waste treatment as it further develops its program.

Recommendations

It is recommended that:

(1) The three suspended Commissions, VI.4 (Atmospheric Environment), VI.6 (Water Quality) and VI.7 (Reclamation of Solid Wastes) be formally dissolved.

(2) The Applied Chemistry Division be asked to prepare a proposal for a new "Commission on Atmospheric Chemistry", including terms of reference and objectives, an initial work program, and proposed membership.

(3) The Applied Chemistry Division be asked to prepare a proposal for a new "Commission on Water Chemistry", including terms of reference and objectives, an initial work program, and proposed membership.

BUREAU ELECTIONS

At every General Assembly elections are held for a number of Elected Members of the Bureau — Division Presidents are *ex officio* members — and, because the tenure of Office of an IUPAC President is only two years, a Vice-President (President Elect). This year, however, not only will Dr. W. G. Schneider (biographical details in *Chem. Int.*, 1983, No. 3, p. 2) take over the Presidency from Prof. S. Nagakura and a new Vice-President be elected but there are also vacancies for the Offices of Secretary General and Treasurer. We will therefore end up with a completely new set of Officers. There must also be elections for vacancies in the Elected Members of the Bureau. These vacancies need not necessarily be filled by entirely new nominees, the IUPAC Statutes (S7.2) allow the renomination of existing members for a second four-year term. Short biographical details, abstracted from those provided for the information of Council, of the candidates so far nominated for the various vacancies are given below. For later nominations see Stop Press (p. 44).

Vice-President (President Elect)

Prof. C. N. R. Rao was awarded his Ph.D. and D.Sc. at Purdue University and D.Sc. at the University of Mysore. He is currently Chairman of the Solid State and Structural Chemistry Unit and Materials Research Laboratory of the Indian Institute of Science, Bangalore. Earlier he has been Head of the Department of Chemistry, Indian Institute of Technology, Kanpur (later Dean of Research) and visiting Professor at Purdue University, USA, Oxford University, UK, and Latrobe University, Australia. He is a Fellow of the Indian Academy of Sciences and the Indian National Science Academy, and of the Royal Society, London, UK; he is a Foreign Member of the Slovenian Academy of Sciences, Yugoslavia, and a Founding Member of the Afralasian Academy of Sciences.



Prof. C. N. R. Rao.

Prof. Rao's research interests are in the fields of solid state chemistry, surface science, spectroscopy and molecular structure, for his contributions to which he has been awarded numerous honours by scientific organizations in India, UK and USA. He is at present a member of the Science Advisory Committee to the Union Cabinet of India, Vice-President of the Indian Academy of Sciences and of the Indian National Science Academy and a member of the University Grants Commission of India and the Science and Engineering Research Council.

Prof. Rao has been associated with IUPAC since 1971. He was a member of the Committee on Teaching of Chemistry from 1971 to 1981 (Chairman 1974–1981), has served on Commission I.5 since 1971 and is currently Chairman, and was elected to the Bureau in 1977. He was IUPAC representative on the ICSU Committee on Teaching of Science 1977 to 1979.

Prof. H. Gg. Wagner, born in September 1928 in Bavaria, received a Doctorate in physical chemistry after study at the Technische Hochschule Darmstadt. He became Dozent of Physical Chemistry at Göttingen University in 1960 and, in 1965, Professor of Physical Chemistry at the Ruhr University, Bochum. In 1970 he was appointed Professor of Physical Chemistry at Göttingen University and was elected a member of the Max-Planck-Institut für Strömungsforschung and of the Akademie der Wissenschaften in Göttingen, becoming Secretary of the Akademie



Prof. H. Gg. Wagner.

and member of the Senat of the Konferenz der Deutschen Akademien in 1977. In 1979 he became a member of the International Academy of Astronautics.

Prof. Wagner has served on the Board of Gesellschaft Deutscher Chemiker, the Deutsche Bunsen-Gesellschaft and the Combustion Institute and in various Committees of these Societies, the DECHEMA and the Deutsche Forschungsgemeinschaft. Since January 1983 he has been President of the Deutsche Bunsen-Gesellschaft für Physikalische Chemie.

His research work has been concerned with combustion and combustion processes, reaction kinetics and thermodynamics of liquid mixtures, for which he has received national and international awards.

Prof. Wagner was elected to the Bureau in 1979.

Secretary General

Prof. T. S. West, born in November 1927 in Peterhead, Scotland, UK, received his B.Sc. at Aberdeen University and his Ph.D. and D.Sc. (1962) at the University of Birmingham. In 1963 he moved to Imperial College, London, as Reader in Analytical Chemistry, becoming Professor in 1965. Ten years later he was appointed Director of the Macaulay Institute for Soil Research, Aberdeen, the position he now holds.

Prof. West has been very active in the Society for Analytical Chemistry (President 1969–1971), the Royal Society of Chemistry, in which he is currently on the International Affairs Committee, and Committees of the Royal Society (London) of which he is now a member of the joint Royal Society/Royal Society of Chemistry Nomenclature Committee, and Chairman of the Analytical Subcommittee of the British National Committee for Chemistry.

His research interests cover a wide area in the field of analytical chemistry, including atomic and molecular absorption and fluorescence spectroscopy, polarography, trace analysis in general, chelate chemistry and biosignificant trace elements in soils and plants. He has lectured on analytical chemistry throughout the world and has received a number of national and international awards and distinctions.

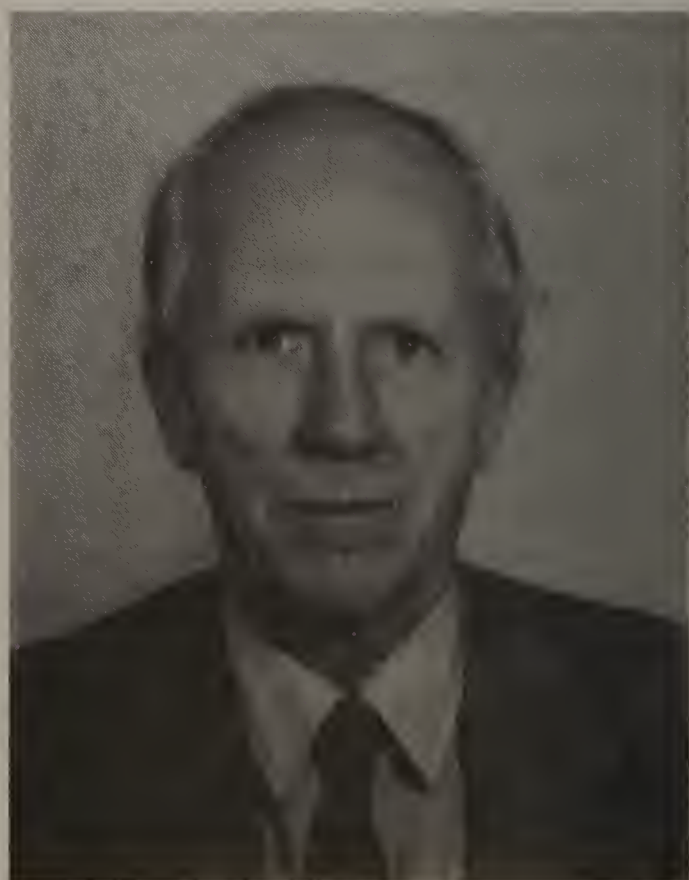
Prof. West's IUPAC experience started in 1965 when he became Secretary of Commission V.3. He was elected to the Division V Committee in 1971, Vice-President in 1973 and served as Division President 1977 to 1981. He was appointed Assistant Secretary General in 1981 and has been very much concerned with the development of the Affiliate Members Scheme, being Chairman of the Committee since 1979.

Treasurer

Prof. A. Björkman was born in Stockholm, Sweden, in May 1920. He was awarded his Ph.D. at Stockholm in 1948 and Dr.Sci. by the University of Gothenburg in 1957. He worked on industrial fermentation at KABI (Sweden) and then, in 1945, as



Prof. T. S. West.



Prof. A. Björkman.

Assistant Professor at the Royal Institute of Technology. In 1948 he joined Billeruds AB to do research and development in the pulp and paper industry and in 1961 was appointed Professor of Chemical Engineering and Technology at DTH, Lyngby, becoming a Danish citizen in 1962.

Prof. Björkman is a Fellow of the Danish Academy of Technical Sciences, the Danish Society of Natural Sciences, the Institute of Energy (London), and Foreign Fellow of the Swedish Academy of Wood Sciences, becoming Executive Secretary/Treasurer in 1980.

From 1968 to 1974 Prof. Björkman was Danish National Representative on the IUPAC Macromolecular Division Committee and was elected to the Finance Committee in 1971, serving as Chairman from 1977 to 1981.

Dr. F. J. M. Nieuwenhuis was born in The Hague, Netherlands, in 1933. He obtained his degree in Chemical Engineering in 1956 at Delft Technical University and Doctor of Technical Sciences in 1958.

After fulfilling his military duties, Dr. Nieuwenhuis joined Shell Internationale Chemie Maatschappij. He has been working with Shell ever since in various functions in the Central Offices and also in the Amsterdam Laboratory, the Pernis chemical complex, in Italy and in Brazil. At present he holds a senior position in the Shell Group's public affairs organization in The Hague. In 1980 he joined the Board of the Royal Dutch Chemical Society, with special responsibilities for information and publicity.

Mr. P. Poirier was born in September 1923 and studied at the École Nationale Supérieure de Chimie de Paris, becoming Chemical Engineer in 1944, and then at the Collège de France. In 1945 he joined the French chemical company Roussel-Uclaf where he did research in organic analysis, creating laboratories for elemental microanalysis and for structural investigation. He then became involved, on the management side, with the development of the company's Research Centre, holding the positions of Director of Scientific Organization, Administrative and Financial Director for Research and Development, Group Staff Manager and Delegate to the President of the Board for administration of the Romainville Centre.

In 1966 Mr. Poirier became Treasurer of the French Chemical Society, in 1973 a member of the French National Committee for Chemistry, in 1977 Treasurer of the Fondation de la Maison de la Chimie (Paris) and in 1982, Vice-President of the Société des Amis de la Maison de la Chimie.



Dr. F. J. M. Nieuwenhuis.



Mr. P. Poirier.

Dr. F. Wollrab was born in June 1926 in Salzburg, Austria. He studied at the Technische Hochschule, Vienna, graduated in 1951 and became Doctor in Technical Sciences. He started work for the Solvay Company in 1952, at the Solvay-ICI polyvinyl chloride plant at Halvic, Austria, where he was Head of the Technical Service Department. In 1956 he moved to the Solvay Research Centre in Brussels as Group Leader, researching into the polymerization of vinyl chloride with a view to development of new products for new applications. In 1960 he became involved, as a Research Group Leader, in the development of new plastics — polymers and copolymers — acrylates, acrylonitrile, vinylidene fluoride, etc. He became Departmental Manager and then, in 1973, Head of the New Resins Department until his retirement in 1982. He is a member of both the Austrian and Belgian Chemical Societies.



Dr. F. Wollrab.

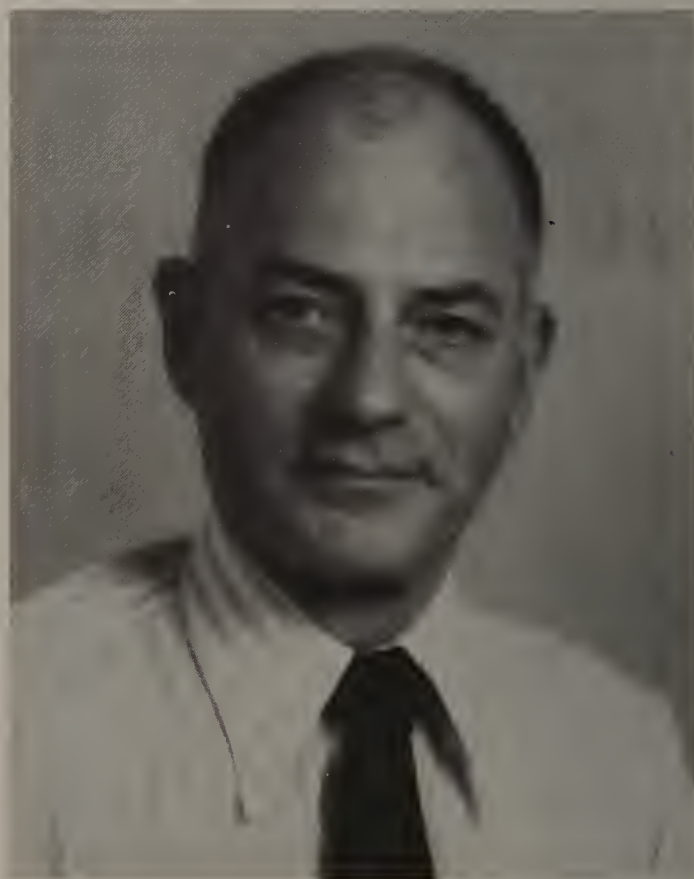
Elected members of the Bureau

Renominations

Prof. Y. P. Jeannin was born in April 1931 and studied first at the École Nationale Supérieure de Chimie de Paris, later becoming Doctor ès-Sciences of the University of Paris. He was appointed Assistant at the University of Paris in 1957 and Chef de Travaux in 1959. He moved to the University of Toulouse in 1964 as Maître de Conférence and then returned, in 1974, to Paris as Professor.

Prof. Jeannin is an inorganic chemist with research interests in solid state chemistry, coordination chemistry and crystallography. Besides his research and teaching responsibilities he has had numerous administrative appointments, both academic and national, including that of General Secretary of the French Committee of Chemistry.

He became an Associate Member of Commission II.2 in 1969 and a Titular Member in 1971. He was elected Vice-Chairman in 1975 and became Chairman in 1981; he represented Commission II.2 on JCBN from 1977 to 1980. He was elected to the Bureau in 1979.



Prof. Y. P. Jeannin.

Prof. V. A. Koptug was born in 1931, in Yuchnov, Kaluga District, USSR. He graduated from the Mendeleev Institute of Chemical Technology, Moscow, in 1954 and was appointed Junior Research Fellow in 1957. In 1959 he was appointed Senior Research Fellow at the Institute of Organic Chemistry, Novosibirsk, later becoming Head of Laboratory and Head of Department. He was awarded his Doctorate of Chemistry in 1963 and became Professor (of physical organic chemistry) in 1965.

Prof. Koptug's research interests include mechanism of organic reactions, carbonium ion chemistry, spectroscopy, and computer applications in chemistry and chemical education. He is President of the Siberian Branch of the Academy of Sciences of the USSR (he became an Academician in 1979) and a member of the USSR State Committee on Science and Technology. He was Rector of Novosibirsk State University from 1978 to 1980.

He became a Titular Member of Commission I.5 in 1975 and was elected to the Bureau in 1979.



Prof. V. A. Koptug.

Prof. D. B. Tonks was born in Edmonton, Alberta, Canada, in 1919 and graduated from the University of British Columbia, Vancouver, in 1941. He was awarded his Ph.D. by McGill University, Montreal, in 1949. In 1948 he was Senior Chemist at what is now the Canadian Centre for Disease Control, Ottawa, and in 1958 moved to Toronto as Biochemist and Research Associate at the Hospital for Sick Children. In 1962 he became Director, Division of Clinical Chemistry, Montreal General Hospital and Assistant Professor, Faculty of Medicine, at McGill University — becoming Associate Professor in 1967 and Professor in 1975.

Prof. Tonks is interested in a very wide spectrum of clinical chemistry including quality control, application of automatic apparatus and computers, standards and standardization, hospital toxicology and industrial pollution, teaching, drug monitoring and trace metal analyses. He is active in many Associations and Societies and has several consultancies. For six years he was Associate Editor, then Editor-in-Chief of *Clinical Biochemistry*.

He was Canadian National Representative to the (then) Section of Clinical Chemistry in 1966 and was elected Section Secretary in 1967 and Chairman from 1971 to 1975. He was an Associate Member of (now) Commission VII.4 in 1973, Titular Member in 1977 and is now Vice-Chairman. He was a coopted member of Division VI from 1975 to 1977 and was elected to the Bureau in 1979.



Prof. D. B. Tonks.

Prof. A. A. Vlček studied at Charles University, Prague, Czechoslovakia, and graduated in 1951. He was awarded his Dr.Sci. (Czechoslovak Academy of Sciences) in 1961 and, in 1965, succeeded Prof. Heyrovský as Director of the Polarographic Institute of the Academy. He was appointed external Professor of General and Inorganic Chemistry at Charles University in 1970, becoming a corresponding member of the Academy of Sciences in 1972. He is now Director of the J. Heyrovský Institute of Physical Chemistry and Electrochemistry and Chairman of the Scientific Board of Chemistry of the Czechoslovak Academy of Sciences.

Prof. Vlček's main field of research is the polarography and electrochemistry of coordination compounds. Besides his normal duties, he has been Chairman or member of the organizing committees of several large international congresses and is head of an UNESCO group on cooperation in electrochemistry.

He was an Associate Member of Commission V.5 from 1967 to 1969 when he became an Associate Member of Commission II.2. In 1971 he was elected to the Division II Committee, becoming Division Secretary in 1973 and Vice-President from 1977 to 1981. In 1979 he was elected to the Bureau.



Prof. A. A. Vlček.

New nomination

Prof. S. Itô was born in December 1924 in Tokyo, Japan. He was awarded his B.Pharm. at the Chiba College of Pharmacy in 1944 and his B.Sc. in Chemistry (1950) and D.Sc. (1957) at Tohoku University, Sendai. He was appointed Assistant at Tohoku University in 1956, Associate Professor in 1962 and Professor in 1965.

Prof. Itô is interested in research in natural product chemistry, e.g. elucidation of the structure and synthesis of terpenoids and alkaloids, and in novel aromatic chemistry, e.g. synthesis, physical properties and reactions of troponoids, azulenoids, annulenes and phanes. He serves on several Editorial Boards and as Dean of the Faculty of Science at Tohoku University. He is a member of the Science Council of Japan.

He became a member of Division III Committee in 1973, Division Secretary in 1975, Vice-President in 1977 and President from 1979 to 1981. He now holds the position of Past President.



Prof. S. Itô.

IUPAC Scheme of Affiliate Membership

The concept, history and possibilities of Affiliate Membership to IUPAC were discussed by the Assistant Secretary General earlier in the year (*Chem. Int.*, 1983, No. 1, pp. 6–10). Since then there has been some further clarification of detail, including more definite estimates of costs and the results of a preliminary poll. National Adhering Organizations have now, therefore, had placed before them details of a scheme that could be in operation in 1985 should Council vote in favour at the General Assembly in Lyngby. These details, dated May 1983, are reproduced below.

1. Introduction

At its Council meeting at Leuven in 1981, IUPAC discussed a scheme of Affiliate Membership based on earlier debate within the Union in 1979 and 1980. The objective was to find a way to maximize participation of chemists in the affairs of the Union by allowing them to become affiliated with IUPAC, provided such association was permitted by their National Adhering Organization (NAO).

The issues involved were set out first by an ad hoc group and subsequently by a Committee on Affiliate Membership and have been discussed additionally by the Bureau in 1981 and 1982, the Finance Committee in 1982 and 1983 and the Executive Committee in 1981, 1982 and 1983. A circular, drawn up for a preliminary poll in a restricted number of countries at the request of the Finance Committee and entitled ‘IUPAC Seeks Your Reaction To Proposed Participation Of Individual Member Chemists’, was sent to all NAOs for information in June 1982.

Following the conduct of this poll and further discussions IUPAC now submits, as promised, details of a scheme which could become operative with effect from January 1985 if it is approved by the Council at the 32nd General Assembly in Lyngby on 25 and 26 August 1983. National Adhering Organizations are now invited to discuss the issues involved.

2. Objectives of the scheme

2.1. To maximize contact between the Union and chemists in a variety of ways without interfering (i) with the rights of the NAOs, as set out in the Statutes and Bylaws, or (ii) in the way in which Divisions and Commissions of the Union conduct their scientific work.

2.2. To provide a broader personal contact base for the Union than the less than 1300 chemists presently listed as active in IUPAC.

2.3. To encourage and facilitate a mechanism for wider knowledge of IUPAC affairs, and discussion of its recommendations, within the 44 countries that have membership status of IUPAC.

2.4. To promote a wider contact of the Union with Chemical Societies, and their members, in those countries where the NAO approves of direct participation of Chemical Societies in the Affiliate Scheme.

2.5. To provide, for the first time, a route of contact for the Union with chemists in non-IUPAC countries by permitting their Chemical Societies to operate an Affiliate Scheme. (There are ca. 125 non-IUPAC countries.)

2.6. Further to provide a route for contact with chemists in countries not having a Chemical Society (or one with insufficient resources to operate a scheme) by allowing them to become affiliated directly via the IUPAC Secretariat.

2.7. By virtue of these various affiliation mechanisms to keep chemists throughout the world informed of what their International Scientific Union is doing and planning and to allow them to comment directly to Commissions and Divisions on scientific matters. This would be achieved by regular receipt of personal copies of the (reorientated) Union magazine *Chemistry International* by all Affiliates.*

2.8. To provide Divisions and Commissions with a direct route via *Chemistry International* to familiarize a greater number of chemists with nomenclature proposals and other projects at the formative stages and to become personally aware of final recommendations as soon as they are published.

2.9. To provide Divisions, Commissions and other IUPAC bodies via the Affiliate Membership list with a route to seek direct personal opinions on scientific matters on as wide a geographical base as possible.

2.10. To provide Divisions, Commissions and other IUPAC bodies via the Affiliate Membership list with the means of contacting potential workers for specific tasks and objectives on as wide an international base as possible.

2.11. To provide NAOs, Chemical Societies, etc., with a list of chemists genuinely interested in IUPAC and informed of its affairs, thus to provide, where useful, a national infra-structure for IUPAC that might assist in sounding out national opinion on IUPAC matters. This national infra-structure might

*Since the beginning of 1983 *Chemistry International* has been reorganized experimentally to carry IUPAC news and views almost exclusively. This policy will be developed further after August 1983 by the appointment of a full-time Editor and an Inter-Divisional Editorial Board which will keep CI under surveillance and assist the Editor to produce a worthwhile magazine.

also be useful to help NAOs and Chemical Societies, as appropriate, in setting up IUPAC Congresses or sponsored Symposia.

3. Non-interference with NAOs

It is *not* an objective of the Affiliate Scheme to interfere in any way with the relationship that exists between IUPAC Council and the NAOs. To this extent it should be noted that the proposed Affiliate Scheme will require no changes to the Statutes of the Union. NAOs will be entirely free to decide whether or not to operate a national scheme of Affiliation. They will also be entirely free to decide how to operate any such scheme, e.g. by organizing it themselves or by authorizing one or more of their national Chemical Societies to do so. Within the framework of their own choice they may allow individuals to apply for Affiliate Membership or they may wish to nominate individuals according to their own selection, e.g. as Reserves for IUPAC activities or as the group of their chemists most capable of commenting at *their* request on IUPAC nomenclature and reports. It is important to stress that, whilst it is the desire of the Union that Affiliates should be free to communicate directly with Commissions and Divisions on proposals for scientific nomenclature, *only* the NAOs will be able to communicate with the Union on matters of policy or non-scientific affairs.

4. Non-interference with national Chemical Societies

It is *not* an objective of the Affiliate Scheme to set up a world-wide Chemical Society, membership type of organization. It is furthermore *not* the objective of the Union to interfere in the relationship that exists between chemists and their own national Chemical Societies. Chemists will be able to become Affiliates of IUPAC *only* via their NAO or its approved Chemical Society, i.e. they must first be members of a Chemical Society.

In those countries where there is no NAO for IUPAC, national Chemical Societies will have to be approved by the Union before they may operate an Affiliate Group. In countries where there is no national Chemical Society or those where a NAO or Chemical Society does not wish to be involved in operation of a scheme, but has no objection to its chemists becoming Affiliates, arrangements may be made directly with the IUPAC Secretariat.

Where a Chemical Society or NAO decides to set up an Affiliate Group it will be entirely free to decide what dues its Affiliates will have to pay. It is IUPAC's intention only to recover its costs for the supply of *Chemistry International*, as its component of the overall due. It hopes that NAOs and Chemical Societies will decide similarly to keep costs to a minimum.

5. Benefits for Affiliates

In return for their support of the Union, Affiliates would:

5.1. Be visible, via the Affiliates list, to the Commissions, Divisions and other IUPAC bodies as possible recruits according to their expertise or specialization. Divisions and Commissions would, however, be entirely free, as at present, to elect their own choice of membership.

5.2. Receive 6 copies per year of the IUPAC Affiliate Magazine *Chemistry International* containing news of IUPAC reports, new nomenclature, symposia, congresses, new developments, feature articles on IUPAC events and personalities and synopsis minutes of Commission meetings.

5.3. Be entitled to obtain 25% reduction on the cost of all future IUPAC publications, except *Pure and Applied Chemistry*.*

5.4. Be entitled to obtain 10% reduction on the registration fees of all IUPAC sponsored symposia and congresses.†

5.5. Be entitled to communicate directly on scientific matters with the officers of IUPAC Commissions and Divisions.

5.6. Be entitled to communicate with Commission members and other Affiliates on scientific matters relating to the Union via the corresponding column of *Chemistry International*.

5.7. Be entitled to such concessionary air (or rail) fares to attend IUPAC Symposia as may be arranged centrally by the IUPAC Secretariat or a Chemical Society Affiliate Group.

5.8. Be entitled to belong to a national IUPAC Affiliate Group if such were to be set up by the appropriate Chemical Society or NAO.

5.9. Be entitled to purchase and use the IUPAC necktie and such other articles as IUPAC may produce from time to time.

5.10. Be entitled (where applicable) to reduction of income tax since the IUPAC Affiliate Due would be a component of the subscription to the national Chemical Society or National Adhering Organization.

6. Cost of Affiliate Membership

The cost of Affiliate Membership will consist of two components, (6.1) the IUPAC component, and (6.2) the NAO or national Chemical Society component.

6.1. IUPAC component

The IUPAC component will consist only of the costs of producing *Chemistry International* (CI), the salaries of the Editor, who will also act as Affiliate

*This has been negotiated with the Union's present publisher and would be required from any future publisher.

†This would be required as a condition for future sponsorship by IUPAC. The number of Affiliates attending any symposium is likely to be relatively small — mainly national Chemical Society members who might have such a concession anyway. In addition, it is a feature of IUPAC sponsorship that the registration fee must not include the cost of social events, e.g. conference dinner. Consequently, the 10% concession should not amount to a serious burden for organizing Chemical Societies. Naturally the organizers will make their calculation of registration fees to allow for concessions to IUPAC Affiliates — as they do for concessions to their own members.

Affairs Officer, and a secretary and bulk postage to the NAOs or Chemical Societies: the Scheme would be self financing. These overheads would be spread amongst all chemists who became Affiliates. In 1981–1982 the IUPAC component was calculated to be \$10 per annum per Affiliate for 1000 Affiliates, or \$3 per annum for 10,000. This assumed that the Union would distribute 2000 copies of CI to NAOs, Company Associates and Commission members, as at present.

In addition, the Finance Committee of the Union recommended to the Executive Committee and Bureau that the Scheme could be underwritten by up to \$50,000 in the first year of operation and up to \$25,000 in the second year and thereafter \$10,000 p.a. for the circulation of sufficient numbers of CI to members of Divisions, Commissions, Company Associates and NAOs. This was not taken into account in the calculation. It was regarded as a cover for any deficit in the initial two years of the Scheme.

6.2. NAO or Chemical Society component

As mentioned in 4 above, each NAO or Chemical Society will be free to recover its own costs in operating the Affiliate Scheme. The costs involved would be those for (i) additional postage to send out CI, (ii) handling charges to put CI into envelopes, (iii) a component of staff overheads for abstracting the names/addresses of Affiliate Group members and sending these once a year to the IUPAC Secretariat, and (iv) other overheads as necessary.

6.3. Results of preliminary poll

Our initial estimate in 1982 was that component 6.2 might be ca. \$5 per Affiliate per annum. On this basis, the total due (components 6.1 + 6.2) was estimated to be \$10–15 for the purpose of the opinion poll conducted for the Union by five NAOs and their associated Chemical Societies. Three of the NAOs circulated all their Chemical Society members and two circulated only a proportion. The data for four of the countries where all the information requested (i.e. numbers of circulars sent, numbers replying 'yes', numbers replying 'no'), were supplied showed that 164,845 circulars were sent out and 18,956 replies (11.5%) were returned. In these four countries, on the basis of a total due of \$10–15 p.a., 11,381 said they might join, i.e. 6.9% of the total Chemical Society membership. 7575 said they would not join an Affiliate Scheme.

If only ca. 50% of those who replied positively from these four countries actually joined as Affiliates in 1985 and a similar number were to join from the other 40 IUPAC countries, plus the rest of the world, there would appear to be at least 10,000 chemists who might become Affiliates with effect from 1985.

6.4. Update of NAO or Chemical Society component of affiliate dues

At the request of the Union two of the Chemical Societies involved in the poll have independently calculated what it would cost them to operate an Affiliate Group, on the assumption that less than half of those who voted positively in the recent poll might actually join in 1985. One country calculated its component of the due on this basis to be \$9 and the other one, \$8. A third country independently estimated its own due to be ca. \$25 because of parti-

cular postal regulations. This is 25% more than the \$20 (including postage) which the publisher presently requests for an individual subscription to CI. [Indeed the publishers at one stage suggested a figure of \$15 (including postage) if they were to sell CI directly to Affiliates.]

It would seem that the IUPAC component (see 6.1. and 6.3.) is likely to be less than \$10 and, because of this and the recommendation of the Finance Committee, it could probably be kept at \$5 for 1985.

What the total due for IUPAC Affiliates is likely to be in individual countries may vary considerably according to circumstances, but there appears to be a real hope that it could be kept to ca. \$15 in 1985. In addition there are likely to be many countries where the number of Affiliates may be small enough for the Chemical Society not to require much overhead charge since the amount of work would be quite small.

6.5. Decision of NAOs required in August 1983

On the basis of the estimates of probable numbers of Affiliates and the total costs of operating the scheme, the Executive Committee, at its meeting on 12 and 13 April, 1983, decided that the Affiliate Scheme proposal appears to be sufficiently viable to require a decision by NAOs in Council at the General Assembly in August 1983.

7. Programme of events 1983–1985

If in August 1983 the Council of IUPAC votes in favour of introduction of a Scheme of Affiliation, it is envisaged that the following steps will need to be taken.

7.1. Each NAO will be asked by the Secretary General if it wishes to set up a Scheme of Affiliation within its own country.

7.2. If the NAO decides to operate the Scheme itself the IUPAC Secretariat will start discussions on implementation with the NAO in late 1983 or early 1984.

7.3. If the NAO decides to authorize a Chemical Society to operate the scheme it will presumably brief the Chemical Society (or Societies) accordingly as soon as possible and allow IUPAC to start discussion with the Chemical Societies concerned in late 1983–early 1984.

7.4. During 1984 IUPAC, in conjunction with NAOs and/or national Chemical Societies approved by the NAOs, will conduct a publicity campaign to notify all chemists in the the NAO country of the scheme.

7.5. IUPAC will, in 1983–1984, consult all NAOs about the Chemical Societies in non-IUPAC countries it wishes to approach and subsequently begin discussions with these Societies.

7.6. IUPAC will appoint an Affiliate Affairs Officer/Editor of *Chemistry International* in late 1983–early 1984 to assume responsibility for Affiliate affairs at the IUPAC Secretariat. *Chemistry International* will be further evolved to meet the requirements of the Affiliate Scheme.

7.7. Every effort will be made to launch the Scheme with effect from January 1985 in all NAO countries who consent to the Scheme and in as many

other countries as possible.

8. The choice before Council

In seeking to launch the Affiliate Scheme the Union is chiefly concerned to maximize its interaction with chemists, not only in IUPAC member countries, but throughout the world. The Scheme is seen as one which will provide a mechanism whereby chemists may have the opportunity to become involved at an early stage in discussion of proposals for new nomenclature, etc. It will offer a direct avenue of communication to a wide range of chemists on all matters related to IUPAC. The Scheme will further provide the Union with a means of improving its image and its efficiency. The Division Presidents see the Scheme not only as an avenue for consultation and dissemination of information on the work of their Divisions,

but also as a means of securing the interest in IUPAC of more young chemists than has hitherto been possible. The Union additionally seeks to launch the Scheme to overcome the 'exclusive club' or 'charmed circle' reputation of which it is sometimes accused. It feels that chemists should now be offered the opportunity to support their International Scientific Union. It is hoped, therefore, that National Adhering Organizations will either support the Scheme at the Council Meeting in August 1983 or adopt the position of allowing the Scheme to be set up, even if they themselves do not intend initially to join.

Between May and August 1983, the Secretary General or Assistant Secretary General will be pleased to answer specific points that National Adhering Organizations may wish to raise. Such queries should be addressed to them at the Secretariat.

What price membership? The dues structure

In the previous Secretary General's Column mention was made (*Chem. Int.*, 1983, No. 1, pp. 5–6) of the possibility of improving the dues structure of IUPAC so that the necessary revenue could be raised but with fewer anomalies and difficulties than with the present system. A considerable amount of work has been done by the Finance Committee to try to reconcile the various proposals and the scheme reproduced below has been put to National Adhering Organizations and the Bureau for discussion at the General Assembly and, it is hoped, approved by Council.

Proposal for an improved dues structure

When the new dues structure (Appendix I) was adopted by Council at Leuven in 1981, two objections were raised.

The first one, of a fundamental nature, challenged the use of chemical turnover (CT) as the sole criterion. Subsequently the Spanish NAO has suggested the use of multiple criteria, but the Finance Committee has found no way so far of combining them into a workable scheme for the calculation of dues.

The second objection was that the categories scale used was too discontinuous, and that a smoother relation would be preferred between CT, dues and number of votes in Council.

Such a refined structure has now been worked out by the Finance Committee, based on the UK suggestion of a mathematical formula. It has been

examined and approved by the Executive Committee and will be submitted to Council at Lyngby with a recommendation for approval.

The formula which has been developed is described in Appendix II. It allows the use of finer graduations of subscriptions, avoids large dues changes when a country changes category, places less emphasis on the absolute reliability of the CT figure and provides a logical basis for any presentation which a NAO may have to make to its funding authority to justify its claims.

Appendix III presents the proposed dues schedule for 1984 and 1985. The invoiced dues for 1983 are given in comparison. The dotted lines separate recommended voting categories, as described in Appendix IV.

Of course, adoption of this proposal will not bring any change in the remainder of the Leuven dues structure.

Finally, the Executive Committee would like to inform you of the possibility of "forward averaging". This applies to the case when a NAO has no possibility of applying for funding changes except at pre-determined, periodic intervals. IUPAC can then work out with the NAO a formula of "forward averaging" for the national dues.

APPENDIX I

Leuven dues structure (Adopted by Council in 1981)

1. Starting in 1982, national subscription and company associate income shall be amalgamated to a national contribution, which will cover/exceed the minimum formal dues for a country.

2. The chemical turnover concept shall remain the principle for category allocation and thus for the minimum dues.

3. The category limits and the minimum formal dues for the categories shall be set by two separate sliding ratios scales with the aim to reduce the national contributions of countries in higher categories to be a reasonable proportion of the total national contributions. The sum of the dues shall be computed to yield an agreed IUPAC income from national contributions.

4. The tentative chemical turnover figures (as at 81.07.27) shall be used for 1982 and the ratio scales for 1982 and 1983.

5. A Category Subcommittee shall be appointed, having the Treasurer as Chairman, two members from each of the Committee on Chemistry and Industry and the Finance Committee, and with the Executive Secretary as Secretary. This Subcommittee shall report through the Finance Committee to the Bureau (Executive Committee) and have the duties

to collect chemical turnover figures,

to consider requests for correction of recommended chemical turnovers,

to consider applications to move one category lower than required by chemical turnover,

to make recommendations to move one category higher than required by chemical turnover.

6. In exceptional circumstances a National Adhering Organization may apply to the Bureau (Executive Committee) for a particular year for permission to make part payment of its formal dues in national currency. Such national currency shall be retained in that country and be used to pay the travel of outgoing Titular Members or the subsistence on incoming Titular Members. Any residual national currency shall be paid to IUPAC in US-dollars by 31 December in the particular year.

7. Starting in 1982, the Company Associate minimum basic unit shall be raised from US\$250 to US\$350 and there shall be an annual service charge per CA mailing unit, separate from formal dues of US\$25.

8. The status of IUPAC Observer Country may be granted by the Bureau (Executive Committee) to enable a small or developing country to become involved in or a country in temporary financial difficulty to remain involved in the Union. An Observer Country shall be eligible to send an observer (no voting rights) to Council meetings and to receive basic IUPAC documentation on payment of an annual service charge of US\$50.

APPENDIX II

Proposed method for calculating IUPAC national subscriptions

The UK proposal that IUPAC moves to a system of national subscriptions (NS) which is related by a formula to chemical turnover (CT) has the following advantages:

- (i) It allows the use of finer graduations of subscriptions and avoids large changes when a country changes category.
- (ii) It places less emphasis on the absolute reliability of the CT figure.
- (iii) It provides a logical basis to any presentation which a national body may have to make to its funding authority for increases in subvention.

The dues schedule for 1982 and 1983 approved by Council at Leuven (Appendix I) was taken as the standard dues distribution. A formula has been developed by the Finance Committee, which relates the total NS needed by IUPAC to the individual country NS in relation to its CT to the CT of all member countries for which CT data are available. The following formula represents the best fit for the 1982–1983 data:

$$\frac{NS_i}{TNS} = \frac{(CT_i) 0.68}{\sum (CT_i) 0.68},$$

where NS_i is the national subscription assessed to a country i in a given year, TNS is the total IUPAC national subscription income required in a given year and CT_i is the chemical turnover for country i in base year.

The Finance Committee projects that total IUPAC national subscriptions for 1984 must be \$430,000 and for 1985 must be \$470,000. Using the most recent CT data (1981) a dues schedule was developed. The countries for which chemical turnover data are available were assessed at 82.2% of the total national subscriptions. The Finance Committee estimated the national subscriptions for those countries for which reliable CT data are not available.

Appendix III presents the proposed dues schedule for 1984 and 1985. The invoiced dues for 1983 are given for comparison purposes. The dashed lines separate the voting categories.

Appendix IV summarizes the basis for determining the voting categories.

APPENDIX III

NAO	1981 Chemical turnover (US\$10 ⁹)	1983 Dues as billed (US\$10 ³)	Calculated dues (US\$10 ³)	
			1984	1985
USA	184.9	70.0	72.1	78.8
Japan	79.5	33.5	40.6	44.4
USSR	64.1	40	35.1	38.3
FRG	51.5	33.5	30.2	33.0
UK	37.6	18.6	24.4	26.7
France	33.4	18.6	22.5	24.6
Italy	24.1	18.6	18.0	19.7
GDR	—	9.8	14.0	15.5
Spain	15.7	9.8	13.5	14.7
Belgium	15.4	9.8	13.3	14.5
Netherlands	13.6	9.8	12.2	13.4
India	11.4	4.9	10.8	11.8
S. Africa	10.4	9.8	10.2	11.1
Canada	10.2	9.8	10.0	1.0
Australia	8.2	9.8	8.7	9.5
Brazil	—	9.8	7.6	8.3
Switzerland	6.7	9.8	7.6	8.3
Sweden	4.1	4.9	5.4	5.9
Czechoslovakia	—	4.9	5.3	5.8
China/Beijing	—	4.9	5.3	5.8
Austria	3.2	4.9	4.6	5.0
Argentina	3.1	4.9	4.6	5.0
Romania	—	4.9	4.3	4.7
Finland	2.5	4.9	3.9	4.2
Denmark	2.1	4.9	3.4	3.7
Norway	1.9	2.45	3.2	3.5
Ireland	1.2	2.45	2.5	2.7
Turkey	—	2.45	2.5	2.7
Israel	—	2.45	2.5	2.7
Egypt	—	2.45	2.5	2.7
Hungary	—	2.45	2.5	2.7
Iraq	—	2.45	2.5	2.7
New Zealand	—	2.45	2.5	2.7
China/Taiwan	—	2.45	2.5	2.7
Yugoslavia	—	2.45	2.5	2.7
Poland	—	1.225	1.5	1.7
Portugal	0.6	1.225	1.5	1.7
Bulgaria	—	1.225	1.5	1.7
Greece	—	1.225	1.5	1.7
Korea Republic	—	1.225	1.5	1.7
Syria	—	1.225	1.5	1.7
Colombia	—	1.225	1.5	1.7
Cuba	—	0.6	0.7	0.8
Venezuela	—	0.6	0.7	0.8
Malaysia	—	0.6	0.7	0.8
		399.975	425.9	465.8

Relation between votes and national subscription

Votes	Number of NAO	Total votes	National subscriptions (US\$)	
			1984	1985
7	1	6	>60,000	>66,000
6	3	18	>30,000	>33,000
5	3	15	>15,000	>16,500
4	8	32	> 8000	> 8800
3	8	24	> 4000	> 4400
2	19	38	> 1000	> 1100
1*	3	3†	< 1000	< 1000
45		136†		

*Intended to correspond to present Category D: voting allowed in Council on scientific but not on non-scientific matters (Statute 5.1).

†Votes on scientific matters; for non-scientific matters total is 133.

IUPAC PUBLICATIONS: Service to Chemists and the Community

by Dr. Dick P. den Os
Chairman, Committee on Publications

Throughout its history, but especially since 1960, the Union has been active in the publishing of periodicals and books. Its pioneer function in areas such as development of nomenclature found its way into numerous publications which have been translated into many languages. This activity has had a tremendous influence on teaching and research in chemistry and interdisciplinary areas in other sciences.

Publications are the traditional outlet for original thoughts, facts and figures; as part of the collection of communication techniques they still, in this age of computer techniques for storage and transfer of data, form an important way for dissemination of knowledge among scientists and the community at large.

Publications programme

After its reshape, completed in 1979, IUPAC's publications programme now consists of two periodicals and several series of books — data, reference, and proceedings of symposia.

Pure and Applied Chemistry (PAC), established in 1960, is the official journal of the Union. It appears monthly and covers all areas of chemistry through the publication of the main lectures from IUPAC-sponsored congresses and symposia. In addition, the recommendations on nomenclature, terminology and symbols and other technical reports from the various Commissions of the Union are published in PAC, thus finding their way to chemists all over the world.

Like similar journals of Scientific Unions and Learned Societies, individual subscribers have virtually vanished, so that gradually only institutional subscribers — the libraries of academic and industrial laboratories — remain. This development has caused discussion about the effect on distribution of the above-mentioned reports, which are intended to reach as many individuals as possible. Measures have been taken to try to solve this problem, but the matter is still under review.

Since 1976 production of the journal has completely changed over to camera ready copy (crc), which has proved to be very efficient and has accelerated publication. Today most symposia proceedings are published within 3–6 months after the event took place, while the reports from Commissions are not delayed more than about 3 months after receipt in crc form.

Chemistry International (CI) was launched during 1979 on an experimental basis. It is the IUPAC news magazine and is published six times a year. CI at the time of its launch replaced the *IUPAC Information Bulletin*, which carried minutes of the main Committees and the Commissions of the Union in considerable detail. In addition, much detailed information on activities of the Union was reported. The change to a new style of publication was meant to make a more readable and digestible vehicle for publicizing the Union's activities. A recent review of its function and effectiveness gave rise to a change in editorial policy (*Chem. Int.*, 1982, No. 6, pp. 1–2). This was also thought to be necessary in order to be prepared for the magazine to act as a major information source for the proposed Affiliate Membership Scheme (see pp. 17–20).

Although, at the moment, distribution of CI is restricted to National Adhering Organizations, Associated Organizations, Company Associates, all persons active inside the Union and some 1000 subscribers, through the above-mentioned scheme its distribution would increase considerably and provide much better economic conditions for its production.

IUPAC Symposia Proceedings constitutes a series of books serving the organizers of and participants at IUPAC-sponsored symposia and congresses. This service is offered through an agreement with our publisher, who advises on market opportunities and feasibility of such publications. Unfortunately production and distribution costs of such books are rather high; only long print runs would effectively lower the cost per copy. Publication of such books on a reasonable price basis is, therefore, restricted to those topic areas in which a large interest is to be expected.

These books, like PAC, are produced from camera ready copy. An interesting development is seen with the introduction of word processors. These techniques are developing rapidly

so that we may expect, in the near future, shorter production lines by direct feeding of type-setting machines with discs from word processors. Unfortunately, as in other fields of electronic application, different word processors on the market are incompatible, but before long this inconvenience may be adequately overcome.

IUPAC Chemical Data Series are compilations of data, critically reviewed according to the state of the art of the relevant field. In addition to various smaller collections of data, e.g. stability constants, thermodynamic tables, a major new project saw, in 1979, the appearance of the first issues from the *Solubility Data Series*. Ultimately this series will consist of up to 80 volumes, to appear over a number of years. It is not only a prestigious project, which on completion is expected to serve the chemical and related communities for many decades, but in its way of production it is confronted with serious logistic problems. Like all other IUPAC publications the vast amount of editorial work is done on a voluntary basis, almost always in addition to various smaller collections of data, involved. However, the start of this project is promising and during 1984 the first 18 volumes should be completed.

IUPAC Chemical Reference Books are normally compendia of Commission reports published in PAC over a period and therefore embody a considerable proportion of the total effort of the Union. Examples are *Standard Methods for the Analysis of Oils and Fats* and the Divisional nomenclature and symbols compendia, the so-called Green (Physical Chemistry), Red (Inorganic Chemistry), Blue (Organic Chemistry) and Orange (Analytical Chemistry) Books.

Revenues

The publications programme of the Union provides a continually increasing revenue in the form of royalties. This royalty income is set against the internal costs which the Union has to bear in order to compile, edit, etc., the incoming texts and to supervise the production stream. The cost/benefit analysis of this activity of the Union is under constant review, also in connection with the relation with our publishers. It is highly desirable to achieve as wide a distribution of our publications as possible. This would mean long print runs and low prices, which is contrary to the interests of the publishers and, through them, of the Union itself which would receive a lower royalty income. But there is more. Although not confirmed by research, I have the feeling that there is a change of attitude among individual scientists with respect to buying publications. More and more is the individual depending on the near-by library, for both journals and books. Quite often the library budget nowadays is under heavy pressure and choices have to be

made as to whether to continue already long standing subscriptions or to start new ones.

Any proposed change in the Union's publication programme must be considered carefully. IUPAC has, at least, to balance its publication budget.

The Future

The Committee on Publications,* established in its present form in 1969, is a Standing Committee for advice to the IUPAC President and Executive Committee on all matters of publications, including policy. Most members of the Committee in one way or another are linked to, or have expert experience with, publication and communication activities. They follow developments and discuss possibilities for adaptation or change of policy. Specifically the opportunities of technological developments as indicated above are constantly under review and discussed with experts from publishing houses and printers.

Recently the International Council of Scientific Unions (ICSU), an umbrella-organization to which IUPAC belongs, has established its own publishing house, called ICSU Press. In due time this publishing house will publish one

or more periodicals ("trends"-type publications) and some new type communications. Since ICSU, through its expert committees, has gathered scientific knowledge in many multidisciplinary fields, the production of a series of popular scientific books is envisaged. ICSU Press will provide the various International Scientific Unions with publication means, either on an advisory service basis or even as an executor — for its executive programme ICSU Press will primarily depend on cooperation with the not-for-profit publishing houses of other scientific organizations. When the renewal of its present publishing agreement with Pergamon Press comes up, it might be interesting for IUPAC to consider cooperation with ICSU Press.

Another field of interest was introduced by our Vice-President, Dr. W. Schneider. He is concerned as to whether IUPAC has a function not only in data compilation but also in access to numeric data bases. It seems his initiative is well understood. Since traditional publications still have a function in data transfer and visible storage, a link is laid between the ad hoc committee to be established for studying IUPAC's rôle and the Committee on Publications. During the coming IUPAC Congress in Cologne part of the Joint Symposium, with ICSU Abstracting Board, on 'Chemical Information Flow: at Present and in the Future' will be devoted to this most interesting question.

*Dr. D. P. den Os, Chairman, Dr. S. Maričić, Mr. T. H. G. Michael, Dr. B. Munsch, Dr. D. A. O'Sullivan, Dr. I. A. Williams.

International Council of Scientific Unions (ICSU)

In the right-hand column on p. 11 of *Chemistry International*, Supplement 1982, is given a list of IUPAC representatives on various ICSU bodies, ten in all but with another one, disguised, at the top of p. 12. Clearly, therefore, ICSU is important to IUPAC (or is it the other way round?) but how many people know what it is and what it does?

This article attempts to provide a brief general picture of the history, functions and management of ICSU. It is hoped that more detailed explanations of how IUPAC interacts with some of the specialized ICSU bodies can be provided at a later date. IUPAC *Information Bulletin* 1978, No. 3, contained articles on two of these bodies, SCOPE (Scientific Committee on Problems of the Environment) and CODATA (Committee on Data for Science and Technology).

Formation, growth and membership

ICSU evolved from the International Research Council (IRC) which was set up in 1919 but whose membership was politically restricted as a result of

the First World War. IUPAC was one of the four inaugurating International Scientific Unions. IRC also had 12 National Member Countries. In 1931 it was dissolved and ICSU was created in its place; all political restrictions disappeared and membership was open to representatives of scientists from throughout the whole world. At that time membership consisted of eight International Scientific Unions (including IUPAC) and 37 National Members. This dual type of membership, National and Scientific, grew up during the IRC period and means that ICSU is really a federation of international scientific unions and national scientific academies or research councils. There are also two other grades of (non-voting) membership — National Associates, applicants qualified but not yet ready for full membership, and Scientific Associates, scientific organizations whose activities are likely to be of mutual benefit or to advance the cause of science. At the end of 1982 there were 20 Scientific Unions, 66 National Members, 4 National Associates and 17 Scientific Associates in ICSU.



Prof. D. A. Bekoe, Ghana: President.

Management of the Council

Just as IUPAC has three tiers of management — Council, Bureau and Executive Committee — so does ICSU — General Assembly, General Committee and Executive Board. The functions of these three ICSU bodies are similar to those of their IUPAC counterparts. The ICSU General Assembly (cf. IUPAC Council) is the highest authority of the Council and determines its general policy. It appoints any Committees deemed necessary, examines proposals by the General Committee and Executive Board and decides on action, holds elections for the Officers and for National Members to the General Committee, examines the Treasurer's accounts and fixes annual dues, examines the work and financial implications of Special or Scientific Committees, and so on. The General Assembly normally meets every other year. At these meetings the Scientific Unions have three votes each, the National Members one and the National and Scientific Associates none.

The General Committee (cf. IUPAC Bureau) meets annually. It consists of the Officers, representatives of the Scientific Unions (including three members of the Executive Board) and delegates, elected at a General Assembly, of the National Members (including two members of the Executive Board). At the moment the Committee consists of 38 members — 5 Officers, 20 from the Scientific Unions and 13 from the National Members; each Officer and representative has one vote. In addition representatives of Special and Scientific Committees may attend but not vote.

The terms of reference of the General Committee are:

(a) to review annually the international scientific scene, to study scientific problems, to encourage and coordinate cooperative activities between the Unions and other component parts of the Council, including the Council's Special and Scientific Committees;

(b) to recommend to the General Assembly the creation or dissolution of Special or Scientific Committees, inter-Union Commissions, or other bodies having as their purpose the attainment of objectives of the Council;

(c) to determine priorities among the scientific activities of the Council;

(d) to elect ordinary members of the Executive Board.

The Executive Board (cf. IUPAC Executive Committee) directs the day-to-day running of the Council and meets whenever necessary, but at least twice a year. The membership consists of the five Officers and three members from the Scientific Unions and two from the National Members, all ten members having one vote each. Special duties before a General Assembly are to prepare a biennial report on the work of the Council, to propose a budget, to propose the range of annual dues and to propose allocation of monies for scientific purposes from the Council's funds.

The five Officers of the Council are the President, First Vice-President and Vice-President or Past



Prof. L. Ernster, Sweden: Secretary General.

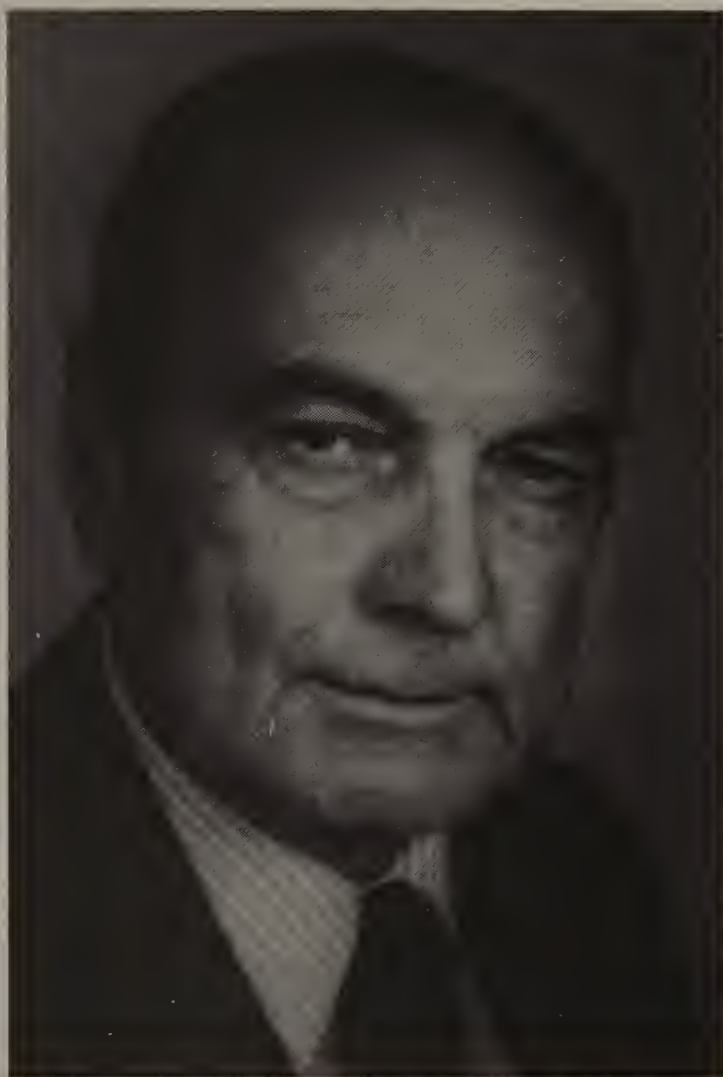
President, all of whom are not eligible for re-election, together with the Secretary General and the Treasurer, both of whom are eligible for re-election but within the limit of three successive terms of office, i.e. six years.

The Council has a small Secretariat (at 51 Boulevard de Montmorency, 75016 Paris, France) to assist the Secretary General and the other Officers in administration and to act as a focal point of contact for all ICSU Members and other international or national bodies.

Finance

There are four sources of funds for the operation of the Council: annual dues from the Members, donations etc. accepted by the Executive Board, revenue from capital investment and special contributions made by National Members. ICSU receives a subvention from UNESCO on an ad-hoc basis and all of this is devoted to scientific activities.

The method of calculating the annual dues of Members appears, to the uninitiated, to be complicated, at least as far as the National Members are concerned. There are seven categories with unit subscriptions (at 1983 rates) ranging from US\$151 to US\$821. Each National Member chooses its own category and then multiplies the relevant unit subscription by the number of International Unions to which it adheres. There is a minimum subscription of US\$500 but a National Member may opt to pay the minimum subscription even if belonging to four or more Unions.



Prof. T. F. Malone, USA: Treasurer.

The *ICSU Year Book* 1982 lists 22 countries paying the minimum subscription, eight in Category I, eleven each in II and III, six in IV, one in V, five in VI and one in Category VII. The selflessness of those National Members in the higher categories will be apparent when it is recalled that a National Member, whatever dues are paid, has one vote at a General Assembly. The Scientific Unions pay 2.5% of their income from their own National Members' subscriptions.

What ICSU does

The objectives of ICSU, as defined in its statutes, are:

- (a) to encourage international scientific activity for the benefit of mankind,
- (b) to facilitate and coordinate the activities of the International Scientific Unions,
- (c) to stimulate, design and coordinate international interdisciplinary scientific research projects,
- (d) to facilitate the coordination of the international scientific activities of its National Members.

The Council insists on the rights of all scientists to participate in international scientific activity without regard to race, religion, political philosophy, ethnic origin, citizenship, language or sex.

With regard to this last point, ICSU has published a booklet — *Advice to Organizers of International Scientific Meetings* — which makes it quite clear that Members should all adhere (as IUPAC does) to the



Mr. F. W. G. Baker: Executive Secretary.

principle that any bona fide scientist should be allowed to attend any scientific meeting anywhere. The IUPAC '3-month 1-month' rule for sponsorship is recommended to other Scientific Unions.

As many members of IUPAC Commissions will have found, there is often an overlap of interests between Commissions within a Division and between Divisions, hence the relatively large number of joint meetings organized at each IUPAC General Assembly. Similarly there are overlaps between Scientific Unions and it is clearly a valuable function of ICSU to ensure that adequate liaison and cross-representation exists between these Unions. ICSU also has a very important function in acting as the formal link between the Scientific Unions and UNESCO, to which ICSU acts as a scientific adviser following a formal agreement in 1947. A recent example of ICSU input has been its contribution to the UNESCO Medium-Term Plan which will be the basis for the activities of the Organization during the period 1984–1989. ICSU has acted to persuade its National Members to convince their Governments that the proposed decrease in UNESCO funding of scientific projects would not be a good thing.

The most obvious activity of ICSU is, however, the operation of its ten Committees, the acronyms for some of which (e.g. CODATA, CTS, SCOPE) will be familiar to many IUPAC people; reference has already been made to earlier articles on two (CODATA and SCOPE) and it is hoped that others will appear on Committees which have IUPAC representatives. So as not to anticipate these, let us take as an example a Committee in which IUPAC does not participate on a regular basis, the Scientific Committee on Antarctic Research (SCAR).

The Antarctic has an influence over the oceanic and climatic conditions of much of the globe; potential sources of protein abound in its seas, the continental ice is an historical atmospheric record and its land mass a possible source of raw materials. However, until ICSU launched the International Geophysical Year (IGY) in 1957, there was little coordinated research in that area. The IGY itself was, of course, an ICSU venture and during this period 55 stations, in Antarctica and the sub-Antarctic islands and operated by 12 nations, were engaged in the programme. International scientific cooperation was outstanding and, in 1958, ICSU formed SCAR to further this cooperation. The success was such that the 12 nations were able to agree to the Antarctic Treaty of 1959 so that cooperation could continue and develop for at least 30 years, during which time the area should be used for peaceful purposes only. Government representatives meet about every two years and the role of SCAR as scientific adviser to the Treaty is firmly established. It has made proposals for the conservation of Antarctic

flora and fauna, is studying problems of mineral exploration and exploitation and, with SCOR (Scientific Committee on Ocean Research), is studying the biological investigation of marine Antarctic systems and stocks (BIOMASS). Representatives from five International Scientific Unions (Biological Sciences, Physiological Sciences, Geological Sciences, Geodesy and Geophysics, and Radio Science), twelve National Delegates, five Officers and five honorary members make up the Committee which has Working Groups on biology, geodesy and cartography, geology, glaciology, human biology and medicine, logistics, meteorology, oceanography, solid earth geophysics and upper atmosphere physics. It is difficult to visualize how such a broad interdisciplinary and international effort could be realized without a body such as ICSU to coordinate it. Incidentally, although IUPAC has no permanent delegate, it and the International Geographical Union are invited to send representatives to meetings when appropriate.

Mention has already been made of the liaison between ICSU and UNESCO. Other intergovernmental bodies with which ICSU has formal relations are the World Meteorological Organization (WMO) with which ICSU jointly organizes the World Climate Research Programme, the International Atomic Energy Agency (IAEA), the International Telecommunication Union (ITU), the Food and Agriculture Organization (FAO), the Economic and Social Council (ECOSOC) and the Council of Europe.

In May 1982 a Committee on Publications and Communications (COPAC) was formed to carry out a feasibility study on the creation of an ICSU Press. The Committee reported favourably to the 19th General Assembly (September 1982), which accepted the report and recommended further detailed study. In January 1983 the Executive Board, on the basis of the Committee's further report, authorized the creation of an ICSU Press in principle, subject to legal clarification. Although ICSU, like IUPAC, has been criticized for length of time taken to reach decisions and produce recommendations, surely nobody can complain in this instance.

It is not possible in a short article to cover more than the barest outline of the Council's work but it is hoped that it is now more evident that ICSU does considerably more than generate acronyms! More details are available from the following ICSU publications:

Statutes and Rules of Procedure
ICSU Year Book (began in 1954)
Organization and Activities (October 1976)
A Brief Survey (January 1982)
ICSU Newsletters.

Notes from recent ICSU *Newsletters* have appeared in *Chemistry International*, 1983, No. 2, pp. 2–3 and it is intended to continue this practice.

PURE AND APPLIED CHEMISTRY

The IUPAC journal *Pure and Applied Chemistry* (PAC) is described on pp. 23–24.
Contents of the last three issues of Volume 55 (1983) are:

Issue	Pages	Contents	Commission
No. 6, June			
		<i>Commission reports</i>	
	907– 930	An annotated bibliography on accuracy in measurement	I.4
	931– 941	Definitions, terminology and symbols in colloid and surface chemistry. Part 1.14: Light scattering (<i>Provisional</i>)	I.6
	943– 976	A collaborative study on the relation between film blowing performance and rheological properties of two low-density and two high-density polyethylene samples	IV.2
	977–1021	Thermodynamic functions of transfer of single ions from water to nonaqueous and mixed solvents: Part 1 — Gibbs free energies of transfer to nonaqueous solvents	V.5
	1023–1034	Proposal of methods for the determination of vinyl chloride and benzene in workplace atmospheres	VI.4
	1035–1040	Recommended notation for use in the description of biological wastewater treatment processes (<i>Provisional</i>)	VI.6
	1041–1048	Characteristics and attributes of instruments intended for automated analysis in clinical chemistry	VII.1
No. 7, July			
	1049–1100	Invited lectures presented at the First International Conference on Bioinorganic Chemistry, Florence, Italy, 13–17 June 1983	
		<i>Commission reports</i>	
	1101–1118	Atomic weights of the elements 1981	II.1
	1119–1136	Isotopic compositions of the elements 1981	II.1
	1137–1230	Compleximetric indicators: characteristics and applications	V.1
	1231–1238	Methods for the determination of fissile and fertile elements: basic data of interest for the spectrophotometric determination of thorium	V.7
	1239–1250	Generating test gases for calibration of methods used in environmental analysis	VI.4
No. 8, August			
	1251–1268	<i>Commission reports</i>	
	1251–1268	Interphases in systems of conducting phases (<i>Provisional</i>)	I.3
	1269–1272	Symbols for specifying the conformation of polysaccharide chains (<i>Provisional</i>)	JCBN
	1273–1280	Abbreviations and symbols for the description of conformations of polynucleotide chains (<i>Provisional</i>)	JCBN
	1281–1371	Glossary of terms used in physical organic chemistry	III.2
	1373–1380	Half-wave potentials of electroactive substances in hexamethylphosphoric triamide	V.5
	1381–1385	Results of a collaborative study on determination of polar compounds in frying fats	VI.3

Two points arise from the above list. First, in these three issues no less than 18 Commission reports are published: in fact, two issues are devoted entirely to Commission reports. Secondly, it will be noted that the main lectures from a Conference held in June are published in the July issue of PAC. Need we say more on the productivity of IUPAC Commissions or the speed of publication in PAC? "But," says somebody, "you have chosen three issues that are favourable to your argument." Not so, it just happened that way and if it does indeed present an unusual picture, that's life!

The comment is regularly made that the fruits of IUPAC labour — the Commission reports — do not find a wide enough audience because they are published in PAC and not in specialist journals. It is surely not unnatural that the Union would wish to publish the work of its constituent bodies in its own official journal BUT reproduction or translation of these reports is, in fact, officially encouraged — a very simple mechanism, as outlined for items in this magazine on the inside cover of this issue, applies: full details appear in the front of *Current Programmes* 1983. So if you think that your Commission's report should be published in your favourite specialist journal(s), have a word with the editor(s) and the IUPAC Secretariat.

29th International Congress of Pure and Applied Chemistry, Cologne, Federal Republic of Germany, 4–12 June 1983

We are grateful to Dr. W. Fritsche, General Secretary of Gesellschaft Deutscher Chemiker, for the text of the Address to the Congress by Prof. R. Sammet, part of which is reproduced below, and for the photographs. We thought that these would be of interest to those not fortunate enough to be able to attend the Congress. We understand that about one thousand people from thirty-six countries were able to participate.

An almost Babylonian confusion existed among chemists around the middle of the last century. Various theories and hypotheses vied with one another as to what chemical substances were and what took place during chemical reactions. It is not surprising that the language used for description was not unequivocal and that the theoretical and experimental findings were expressed by different formulas. The molecular hypothesis posulated by Avogadro was not understood by most of his contemporaries. Unsuitable expressions had made a contribution to this misunderstanding; thus the word "atom" was also used for compounds. One outcome of this argument about theories, for example, was that water was formulated in four different ways and the formulas proposed for acetic acid filled a whole page in the text books. Lothar Meyer wrote: " C_2H_4 was either firedamp or ethylene, depending on the side which the author happened to support".

In the autumn of 1859, Kekulé discussed with his colleague Weltzien how very useful an international meeting of chemists would be in order to clarify opinions. At the suggestion of Weltzien, a meeting

was held in Paris during the latter days of March 1860, which Wurtz, Weltzien and Kekulé attended, the opinions of Pasteur, Cahours and others also being asked. Soon afterwards, a printed leaflet in French dated "Paris, 5 April 1860" was distributed to the most important experts. I quote: "dans le but de provoquer une réunion de chimistes autorisés par leur travaux ou leur position à émettre un avis dans un débat scientifique. L'objet de ce congrès serait la discussion de quelques questions particulièrement importantes au point de vue des progrès de la science . . .". In an accompanying letter, Weltzien explained the request to his German colleagues, an excerpt of which read: . . . "that it would be highly desirable for chemists to agree on certain things, for example, acceptance of the same equivalents and specific gravities of vapours. It also appears to me to be in keeping with the times to aspire to representing the same idea by the same word and symbol. I believe, furthermore, that it would be useful to endeavour to set up a rational nomenclature".

The first international congress of chemists was held in Karlsruhe, Germany in September 1860. Even



From left to right: Prof. Karl Carstens, President of the Federal Republic of Germany; Prof. Rolf Sammet, President of Gesellschaft Deutscher Chemiker; Dr. Wolfgang Fritsche, General Secretary of Gesellschaft Deutscher Chemiker.



The present IUPAC President and a former President, Prof. Wilhelm Klemm.

IUPAC Vice-President Schneider talks to former Secretary General, Dr. Rudolf Morf.

during the preparations — how could it have been otherwise over 100 years ago — certain national sensitivities had been affected. Weltzien countered these with the following words: “Science is of no age and no country, it belongs to the world”. In his opening speech he said: “For the first time the representatives of a single natural science, namely the youngest, have come together here; however, these representatives belong to nearly all nationalities. We are of different descent and speak different languages, but we are related through our specialist field; one scientific interest joins us together, the same purpose unites us”.

The impetus of this first international congress of chemists to agree on a generally valid system of notation, by means of which experimental results could be unequivocally recorded and communicated, has made a substantial contribution towards elevating the young science of chemistry to the rank of an exact science. On this basis chemistry was able to achieve a great expansion and immense successes in science and industrial application during the latter decades of the last century. The development of chemical science and the chemical industry was initially concentrated in European countries. The international character of our discipline was already manifesting itself in the economic field too in those early days. Thus the German chemical industry, even in times when protectionist tendencies determined economic policy, was always committed to free trade, to unfettered but fair international competition. The list of major chemical-producing nations has grown continuously. If I only name the United States of America and Japan, these are merely examples of many which we have observed around the world, where the will to achieve something, a high scientific commitment and cosmopolitan attitudes have led to a rapid expansion of chemical science and the chemical industry.

Discussion by chemists concerning the formal basis of their science has not ceased since the first congress in Karlsruhe. It was institutionalized in 1919 by the foundation of the International Union of Pure and Applied Chemistry. This association, in which the chemists of 44 countries are represented and united through their national organizations, can take credit for the fact that we chemists from all parts of the world can talk about problems of chemistry and can communicate with one another. If, despite the rapid development of the classic fields of chemistry and the many new tasks and areas of activity, no Babel of language exists, it is thanks to the work of many colleagues within IUPAC. In the course of time IUPAC has proved itself an authority in problems of chemistry for third parties too. It is a participant in discussions relating to questions of chemistry with many international organizations such as UNESCO and the World Health Organization; recommendations of IUPAC frequently constitute the basis for statutory regulations which concern the chemical industry.

This 29th Congress of the International Union for Pure and Applied Chemistry, in keeping with the character of our association, encompasses the entire spectrum of modern chemistry. In the process of preparing the Congress, we have endeavoured to attain a high scientific level by the selection of the right

speakers and subjects. On the other hand, it was not our intention to gather together only a circle of scientists interested mainly in theoretical problems, but to reveal through the choice of subjects

- that chemical processes accompany our whole life,
- that we make use of chemical processes in order to shape our environment within the meaning of a high level of civilization and in order to create a high standard of living,
- that we utilize our knowledge of the conversion and activity of substances to satisfy the needs of a growing world population for health and adequate nutrition, to name only the two most urgent.

Applied chemistry, the utilization of our knowledge of the conversion of substances for the benefit of mankind, always inseparably includes questions about raw materials and energy sources and the task of protecting the environment against harmful effects of these activities and an excessive impact on the ecosystem. In the choice of subjects for the work during the next few days we have endeavoured to take these into consideration.

By means of this Congress we want to provide an answer to the question “quo vadis chemistry?” In doing so we first want to account to ourselves, as it were, for the aims of our work. We need freedom to develop our research, we must have the possibility to pursue scientific inquisitiveness, even to follow up almost trivial questions at times. We also need intensive, pure research not tied to a specific purpose, in order to widen our knowledge. But all this must not be aimless and we should be able to explain their goals. It is relatively easy for us chemists to communicate with one another. However, it seems to me that it is becoming increasingly difficult for us to make ourselves understood by our fellow men in whose society we live. With the aid of our system of notation we can classify and evaluate the chemical reactions that take place in experiments or everyday processes. Many of our fellow men see or feel the change of materials or the environment, but they do not find a basis for a proper assessment. The more we experts learn about the interrelations and the more we believe or at least create the impression in the eyes of the others that our possibilities of being able systematically to shape the material world around us, are increasing, the greater must be the gulf between the one who comprehends and the one who doesn't.

A common language, based on well defined concepts within the compass of which the measurable or visible processes can be abstracted, was the objective of great chemists 120 years ago. We must cultivate and preserve this common language. However, it does appear to be an urgent necessity today to find possibilities of communication with our social environment. This is an extremely wide and difficult task. It extends from the teaching of chemistry at school to informing the public of new developments and results of our science. The esteem in which chemistry is held in the individual countries and culture groups varies very widely. This certainly also

depends on the extent to which chemistry manifests itself as a means of shaping our lives and the degree in which the chemical industry reveals itself as an economic factor. The more important and noticeable chemistry becomes for the individual, the more important communication between experts and laymen is. If the discussion is interrupted, the mutual basic consensus is at risk. Reserve, suspicion, even fear then soon determine the climate. It is not surprising then if the word "chemistry" or "chemical" is afflicted with negative associations and values, in contrast to the positive concept "nature" or "natural".

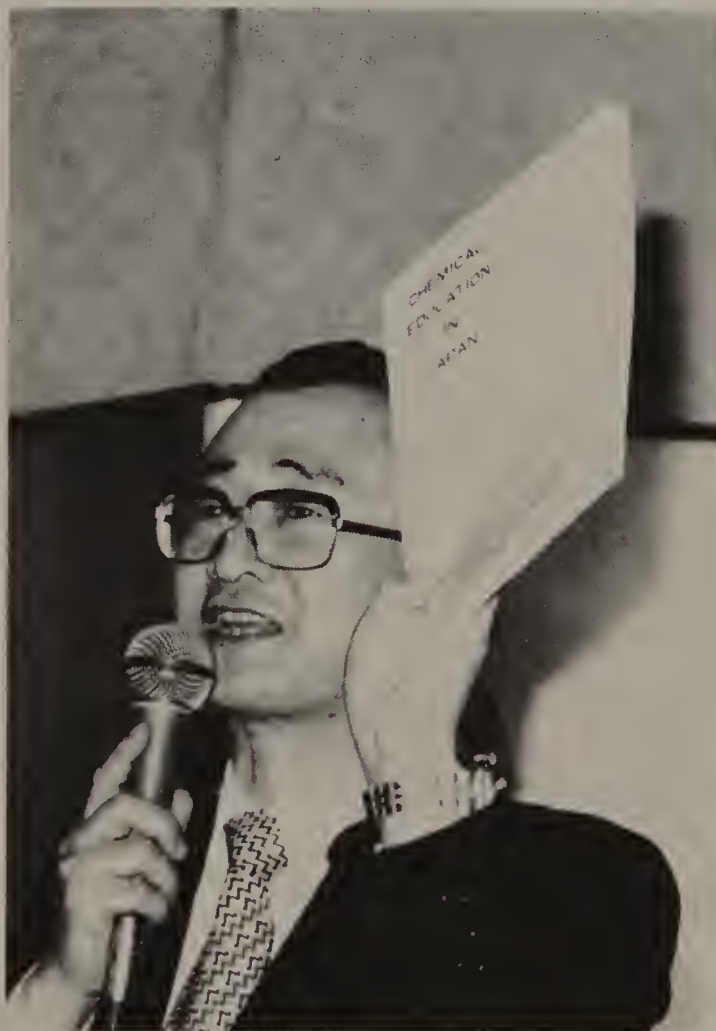
For us as scientists such a valuation is certainly often incomprehensible. For we also consider it our task to free ourselves by means of our knowledge of nature from the constraints of and dependency on nature, which are marked by disease and hunger for many people to this day. Chemistry has made great achievements for the benefit of mankind during the last hundred years. We know this, but why do we find it so hard to make others aware of these facts? Chemistry is not without risk. Why do we find it so hard to talk about this and convey the feeling to our fellow men that we are dealing with these risks in a responsible manner? We want people to trust us to

do the right thing. What can we do to convince our fellow men that we do in fact deserve this trust? In our society numerous people discuss many things and have a say in decisions. But this requires people to be appropriately informed. We should always be aware that it is not sufficient to reveal the facts as we see them. Information has only been conveyed if the message has actually been understood. Our duty to enter discussion does not end if we are not understood. In that case we must open up new avenues of communication. "Everyone needs to know chemistry", that is the subject of a plenary speech on Wednesday. We see this as a challenge to us, not to others. Consequently, the second part of the theme reads "a teaching challenge".

There are many problems for mankind to solve, which ensue from the regularities of our material environment. Chemistry, more than any other discipline, can and must contribute towards solving them. Every one of us can and must make his contribution to ensure that our endeavours towards solving these problems are accepted by a critical general public. This is a task which, despite all national idiosyncracies, cannot be achieved without an exchange of ideas at an international level. I am pleased that IUPAC has made this its duty.

Names and faces from Japan

Prof. J. T. Shimozawa (CTC), at a reception given by the Japanese Company Associates for the IUPAC Executive Committee, recommended the revised edition of *Chemical Education in Japan*. This is a two-part booklet: Part I, General Survey, has chapters on the historical background and present state of chemical education, teacher training, research on chemical education and future problems; courses of study are outlined in an Appendix. Part II, Industry and Academics, has chapters on the history of the Japanese chemical industry, the relationship between industry and the school system, and the results of a survey on in-company training.





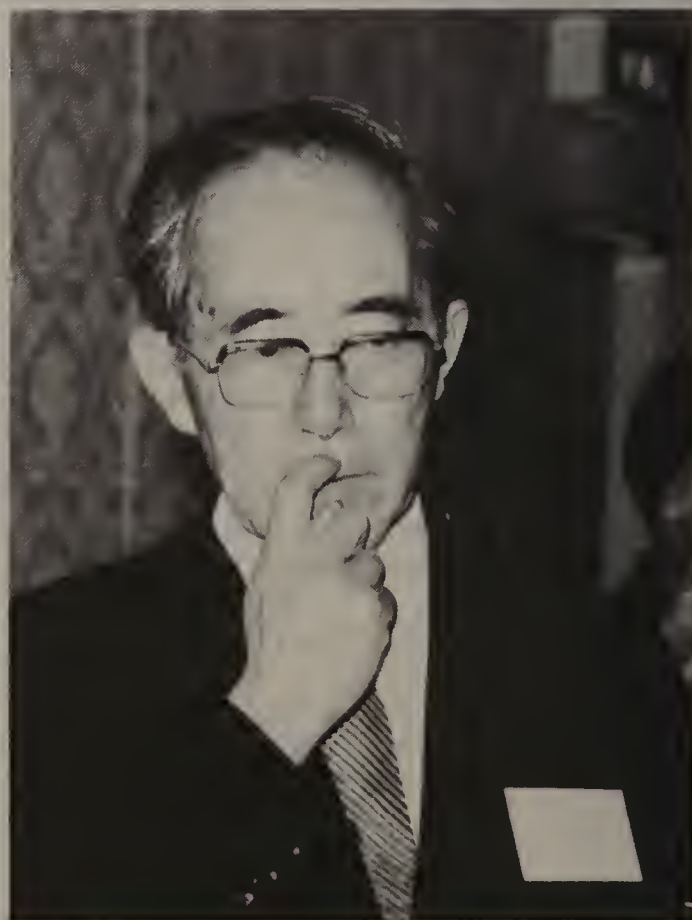
Dr. K. Takeda, Convenor of the Japanese Company Associates, welcomes the Executive Committee to a reception.



Prof. K. Fukui, Nobel Laureate 1981, President of the Chemical Society of Japan, addresses the Executive Committee.



Sign here, please! Prof. West and Prof. S. Mizushima, a former Bureau Member.



Prof. S. Shibata, Chairman of the National Committee for Chemistry, Science Council of Japan, looks thoughtful.

The Editorial Advisory Board

You may remember the article by the Honorary Officers of IUPAC and the Chairman of Publications Committee (*Chem. Int.*, 1982, No. 6, pp. 1–2) on the editorial policy for *Chemistry International*. I quote — “It is our intention, therefore, that Dr. Gellender’s successor [Not me — I’m only a stop-gap — Ed] will be provided with the facility of an Editorial Advisory Board appointed from within the IUPAC bodies. It will function in an auxiliary newsgathering capacity to the Editor, alerting him, or her, to newsworthy items of interest to chemists inside and outside IUPAC which have arisen or are about to arise within our Divisions, Commissions, and other bodies. The Board will also be available to check over interpretative material from the Editor upon request and to meet him/her at General Assemblies to keep the policy and contents under review, to discuss future articles, etc.”

Things are progressing. The Editorial Advisory Board will hold its first meeting during the General Assembly, under the chairmanship of the Secretary General, Prof. Ourisson, whom many of you will remember as a former Chairman of Publications Committee. The current Board membership is:

Prof. G. Ourisson, Secretary General
Dr. D. P. den Os, Chairman, Publications Committee
Prof. K. S. W. Sing, Division I
Prof. E. Fluck, Division II
Prof. S. Itô, Division III
Prof. M. Mandel, Division IV
Dr. J. C. White, Division V
Dr. L. E. Coles, Division VI
Prof. D. B. Tonks, Division VII
Prof. L. Paolini, CTC
Dr. H. Egan, CHEMRAWN Committee
Dr. R. Degain, COCI
Dr. K. L. Loening, IDCNS
Mr. R. W. Fennell, Editor (temp), *Chemistry International*.

So that the Board may have some definite written views to work on, a questionnaire has been sent to National Adhering Organizations, the Bureau and Presidents (or Chairmen) and Secretaries of all IUPAC bodies. If you are not on this list and have any views that ought to be considered at the meeting (19 August), and if there is time to do so, perhaps you would write or speak to your representative. The actual personnel of the Board may change after the General Assembly but we intend to publish the names of the Board members on the inside cover of *Chemistry International* in the future.

R. W. Fennell
Temporary, part-time Editor

Reactions

In every issue so far in 1983, I have appealed for comments on the style and contents of the revised *Chemistry International*. Comments, of various sorts, are now beginning to come in. You may be interested in these abstracts, all referring to issue No. 1:

“It is generally well written and informative and represents a good beginning.”

“This guy [the Editor] is one of the problems [of IUPAC] . . . how soon can he be replaced?”

“ . . . I should point out that the listing of IUPAC conferences in the February

1983 issue . . . is incomplete insofar as meetings in 1984 and beyond are concerned."

" . . . how pleased I am with the latest (February 1983) issue of *Chemistry International*. It reflects exactly what I feel the magazine ought to be, a magazine about IUPAC people and IUPAC activities, and not just another chemical news magazine.

I also want to mention my appreciation of the photographs. They are so helpful in enabling me to associate faces with names. Moreover, they are bound to make IUPAC appear a more humane or less impersonal organization."

"It is extremely informative on IUPAC activities and is a great help to anyone interested in IUPAC activities. . . . The magazine should be an interesting and informative source of information on IUPAC's scientific work. . . . A brief informative report on Commission work

would be helpful in informing more chemists on the value of IUPAC efforts. . . . A brief report by each Commission . . . on the expected value of their results to the chemical community would be an important contribution. One report every four years by each Commission would provide an excellent source of information on IUPAC. . . . These reports should be results oriented; aimed at chemists interested in the field of science and not knowledgeable about IUPAC."

I am extremely grateful to all those who have taken the trouble to let me know what their impressions were of the first issue in 1983. Reader reactions are of immense value, particularly before a meeting of the Editorial Advisory Board (see p. 35), so what did you think of Nos. 2, 3 and 4? If you do not have time to write to me, please tell your Advisory Board representative what you think is right or wrong.

R. W. Fennell

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

Analytical Chemistry Division Executive Committee: Paris, France, 26 February 1983.

Election of Division Committee Members

Ballot papers have been mailed to all voting members of the Division. The Executive Committee will review the results of the election prior to the General Assembly for country/discipline-representation and, if necessary, recommend that co-opted members be selected to ensure a reasonable balance within the Division Committee.

Nomination/Election Committee

The Executive Committee agreed to recommend Prof. T. Fujinaga to the Division Committee as Chairman of the 1983-85 N/E Committee, with Prof. Duyckaerts and Dr. A. Strasheim continuing as former members and Dr. J. C. White, as a new member according to the Division Bylaws.

Composition of Division Committee

The Executive Committee agreed on a nomination of Vice President for 1983-85 to place before the Division Committee at its meeting in Lyngby, August 1983. A recommendation for the post of Secretary will be delayed until the meeting of the Division Committee at the General Assembly.

Review of Commission Membership

Membership of Commissions was reviewed; V.1 and V.3 must elect new Chairmen as both had reached the end of their periods of office and were not eligible for re-election. An anomaly was noted in V.8 where the terms of all the Commission members expire at the same time. The Secretary was instructed to write to the Commission Chairman expressing the Executive Committee's concern about the continuity of their program and to suggest that three of the present members should be asked to stand down, thus to allow a more even rotation of membership than

would otherwise occur in 1987, if all were re-appointed to a second term of office.

The status of the suspended Commission on Analytical Radiochemistry (V.7) was discussed. The report by the ad hoc committee chaired by Prof. Grasserbauer which recommended continuation of the Commission but with a brief wider than analytical radiochemistry was discussed. The Division Executive Committee decided to recommend to the Bureau that the Commission shall be continued and that its leadership be retained in the Analytical Chemistry Division, with both the Chairman and Secretary being nominated by the Division Committee in the first instance. Dr. White will be recommended to chair this Commission. Other members to be recommended will be discussed at the meeting of the Division Committee at the General Assembly in Lyngby. Any Titular/Associate members recommended from without the Division should become members of the Analytical Division.

Division projects

Compendium of Analytical Nomenclature

The Executive Committee noted that progress had been extremely slow since the project to revise the Orange Book had been set up four years ago. Since the Bureau is insistent that projects be completed expeditiously and the reputation of the Division is now at risk, it was agreed that the Chairman of this project should be advised that a draft for revision must be tabled at Lyngby.

Multi-lingual Dictionary of Analytical Chemistry

The President reported on his correspondence with the Chairman of the Multi-lingual Dictionary project which had also achieved virtually no progress since it had been set up four years ago and the Executive Committee again expressed its concern. The Committee discussed and agreed a format for the dictionary to be based on the ca. 2000 terms in the Compendium. These should be defined in English, the Union's present official language, and the corresponding names or terms should then be listed alphabetically in word lists in the other languages, viz. Chinese, French, German, Japanese, Russian and Spanish, with references back to the pages where the definition could be found in English. The English definitions would, at the end, list the page numbers where the corresponding Chinese, French, German, etc., words could be found. When this first edition had been produced it would be open to NAOs to produce the corresponding edition in their own language, e.g. French, where the definitions would be given in French with word lists in the other six languages.

The President would write to the Chairman of the Multi-lingual Dictionary project along these lines and request a progress report at Lyngby.

Trace Elements in Natural Waters

The Chairman of this project reported that he expected to receive from the Commission Chairmen at Lyngby enough material to prepare a report,

'Analytical Procedures Recommended by IUPAC for the Determination of Trace Elements in Natural Waters'. The Division Committee considers this work to have a very high priority.

Division Think-Tank

The Executive Committee reviewed Prof. Grasserbauer's report which will be discussed with the Division Committee. The Executive Committee agreed to recommend to the Division Committee that the work of the "Think-Tank" Committee be suspended until 1985 at which time a decision will be made whether to reactivate the committee.

IDCNS

No changes in representation will be recommended at Lyngby.

ISO

Dr. White agreed to continue to handle the ISO draft standard procedures for review until the newly elected Secretary is ready to assume this project.

Harmonization of Collaborative Analytical Studies

The Executive Committee discussed future participation by the Division in this project. The effort seems to have matured sufficiently that further participation is unnecessary, particularly in view of diminished resources and the demand upon the Division for financial support.

J. C. White

Commission IV.2 — Polymer Characterization and Properties. Working Party on Structure and Properties of Commercial Polymers: Spetses Island, Greece, 3-7 September 1982.

The summary minutes that follow have been extracted from the full minutes written by Dr. D. R. Moore — *Editor*.

A study of runaway creep in high impact polystyrene (J. M. Cann)

A written report was distributed by J. Cann. No further experimental work was recommended and therefore the work can now be written up. The anomalous observations have no ready logical explanation and some thought must therefore be given to the message/theme of a paper. Participants in this project should write to J. Cann with suggestions on the emphasis and theme of the paper which can then be written by October 1983.

Impact toughness of polypropylene (C. B. Bucknall)

C. Bucknall circulated a summary report on a programme on impact properties of polypropylene mouldings. This programme concerns both material properties (e.g. K_c and σ_y) as well as the toughness of mouldings fabricated from these materials. Both homo and copolymers of propylene are involved.

To assist interpretation of the toughness data, it was proposed that Drs. Heijboer and Ajroldi send some Rhone-Poulenc butt-weld plaques in homo and copolymers of polypropylene for examination of the through thickness texture, using optical microscopy. The interlaboratory measurements of K_c , G_c and σ_y caused some confusion because of the large ductility exhibited in many of the tests.

Resolving actions agreed:

(a) For polypropylene copolymer, Dr. Fleissner would conduct some further G_c measurements for specimens prepared with 'fast' and 'slow' cutting of notches.

(b) More test details were required by Dr. Bucknall, particularly notching techniques.

(c) More data were required by Dr. Bucknall on the relationship between yield stress at high testing speeds and also at various test temperatures (for all polypropylenes).

A further report would be collated by Dr. Bucknall and distributed before the next meeting.

Toughness behaviour of nylon 66, hdpe (C. B. Bucknall)

This programme relates to the application of fracture mechanics to the prediction of the ductile-brittle transition. Documents presented were:

Dr. C. Bucknall — an introductory document.

Dr. W. Retting — results for tensile tests at high speed at -40°C .

J. Cann — notched Charpy results for nylon 66 and hdpe together with optical micrographs of weld region.

TNO — I Determination of G_c by impact tests.

II Single-edge notched tensile tests.

Dr. G. Ajroldi — Preliminary results of some experimental data on falling weight and fracture mechanics of hdpe, PA66, PP homo and copolymer.

ICI — Instrumental falling weight impact results.

For nylon 66 the observed flow (0.5 mm) is of similar size to the calculated flow (0.3–0.5 mm). Further experimental work is envisaged in order to conduct a similar theory/experimental study for other materials, particularly polypropylenes.

Arrangements were made for continuation of experimental work; when this is completed, results should be sent to Dr. Bucknall by the end of June 1983. He will produce a summary report by August 1983.

Oriented polypropylene film project (A. J. de Vries)

There are no new results via working party activities, although the individual efforts of Dr. de Vries and Prof. Seferis extends knowledge beyond that already available in the two published reports. Dr. de Vries

will consider preparing a paper that will be made available to the working party as Report No. 3.

Elongational flow of polymer melts (J. L. White)

(a) The stability of elongational flow of molten polyester (PET)

Reports received from Rhone-Poulenc, ICI and Prof. Macosko were discussed. New results on MW distribution (a different set of chromatographic columns with more resolution) show the MWD of samples are A,C,D. B is still much wider and branched. Prof. Zachmann found a much sharper MWD using an ultracentrifuge at 13°C . Prof. Janeschitz-Kriegl could measure flow birefringence and biaxial extension, the latter would also be done by Prof. Winter. Prof. Zachmann would do IR measurements.

(b) The stability of elongational flows of molten polyethylene

(c) Extrusion instabilities of polyethylene

Reports were received from Profs. Macosko and Geil and Mr. Ghijssels. The identities and requirements for samples were discussed. Reports must be received by the coordinator before 30 June 1983, even if work is still incomplete.

Development of the programme on the rheology of polyethylene films (film blowing) (H. H. Winter)

Winter said that the PE film data were available but the correlations between data and processing had to be found. Analysis of the film blowing process needs a model. Umass + Stuttgart are currently working on such a model and this work might include IUPAC data with the Working Party's permission. It is noted that there is a lack of biaxial extensional data to work on; shrinkage values on the films are higher than those predicted from uniaxial extensional and shear data.

Future programme

Possible future projects discussed included:

(a) Mechanical characterization of fibre reinforced composites.

(b) Processing-property evaluation of PET film.

(c) Instabilities during the coextrusion of different polymer melts.

(d) Polymer-particulate melt flows.

(e) Survey of methods for determining viscoelastic spectra.

Dr. H. Meyer and Dr. D. R. Moore were elected as Chairman and Secretary, respectively, of the Working Party whose next meeting will be at Ludwigs-hafen, FRG, on 3–5 October 1983.

Commission VI.1 — Food Chemistry: Vienna, Austria, 30 August–1 September 1982

By invitation of the National Representative of Austria, Dr. Czedik-Eysenberg, the annual meeting of the Commis-

sion on Food Chemistry took place in Vienna immediately preceding the Vth International IUPAC Symposium on Mycotoxins and Phycotoxins. This coincidence enabled a rather large number (approx. 30) of observers and members coopted to the working groups to attend the meetings, indicating the interest in the Commission's activities.

The *Working Group on Mycotoxins*, for which Dr. Pohland is the new chairman, successfully terminated three projects after publication of the results: aflatoxin residues in foods of animal origin, a collaborative study of an aflatoxin M_1 procedure, and a review of multimycotoxin screening procedures. A fourth project, the compilation of specifications for mycotoxin analytical standards had been finished and a paper would be published in November 1982. A project aimed at publishing a manual of sampling plans is in abeyance due to the death of Dr. Campbell.

The Working Group is at present engaged in an IUPAC-AOAC collaborative study on ochratoxin; a planned collaborative study of a trichothecene TLC screening method; the International Check Sample Programme; a project aimed at publication of guidelines for safety evaluation of aflatoxin-contaminated feeds; and a new project aimed at developing information on the effects of processing on mycotoxins.

The Commission was informed that Switzerland has proposed a 10 ppt (parts per *trillion*) tolerance for aflatoxin M_1 in ready-to-use baby food and questioned the feasibility of developing a test method. The consensus of the Commission was that such a method does not exist; any current method collaboratively studied at that level would fail.

The *Working Group on Aquatic Biotoxins*, under the chairmanship of Professor Krogh, predominantly works on a method for the chemical determination of paralytical shellfish poisons, which should be studied collaboratively at a later stage. However, at present only biological testing, using mice as test animals, gives conclusive results.

Both Working Groups have been responsible for the organization and the scientific programme of the Vth International IUPAC Symposium on Myco-

toxins and Phycotoxins in Vienna, Austria, 1-3 September 1982. Of the 83 papers presented, 13 involved trichothecenes and 18 ochratoxin. Highlighted were papers by van Rensburg (S. Africa) on the possible relationship between mycotoxin exposure and esophageal cancer, and by Bayley (Zambia) on the involvement of hepatitis of ochratoxin in human nephropathy. The Proceedings for the symposium have already been published. The organization of the VIth International IUPAC Symposium on Mycotoxins and Phycotoxins to be held in 1985 at Lyon, France, in cooperation with the International Agency for Research on Cancer, has started.

The establishment of an International Mycotoxin Coordinating Committee is at the planning stage. A nucleus of individuals from Commission VI.1 has been established, including Dr. Pohland (Chairman), Dr. Park (Secretary), Prof. Kojima (Japan), Prof. Jemmali (France) and Prof. Krogh (Denmark), to develop the idea further.

Independent of the two Working Groups, a series of projects dealing with inorganic and organic contaminants are the responsibility of several project coordinators. Improved methods for the determination of fluorine, mercury and selenium in food will be developed and tested in the near future. The work on the determination of tin has been published and the project terminated successfully.

A collaborative study on a method to determine N-heterocyclic carcinogens in food has been completed, and a publication is on the way. The project will be followed by one dealing with a rapid preselection method for benzo(a)pyrene. The project in the nitrosamine area will concentrate on the determination of total nitrosamines in food. The project on residues in edible products from treated livestock is mainly concentrated on residues of sulfonamides in muscle and liver and methods of analysis for the determination of these compounds.

The next meeting of the Commission will be held in Lyngby, Denmark, 19-22 August 1983. Joint meetings with Commissions V.1, VI.2, VI.3 and VI.5 are scheduled.

G. Billek

RECENT REPORTS

Atomic weights of the elements 1981

The biennial review of atomic weight, $A_r(E)$, determinations and other cognate data have resulted in the following changes in recommended values (1979 values in parentheses): Hydrogen 1.00794 ± 7 (1.0079 ± 1); Silver 107.8682 ± 3 (107.868 ± 1); Lutetium 174.967 ± 1 (174.967 ± 3). These values are incor-

porated in the Table of Standard Atomic Weights of the Elements 1981. Whereas in the past, the Table indicated uncertainties as either 1 or 3 in the last place, other single-digit uncertainties will in the future be quoted when there is convincing evidence that, by their use, a more precise standard atomic weight can be tabulated. Important changes in annotations and the wording of footnotes to this Table and the Table of Isotopic Compositions are discussed. Changes in $A_r(E)$ values and in their estimated uncertainties in the period since 1969 are analysed. The Report includes for the first time a Table of Atomic Weights abbreviated to five significant figures in the expectation that changes in the tabulated data will rarely be needed. Attention is drawn to the possibility of materials being commercially available containing elements with unusual

atomic weights due to the enrichment or depletion of isotopes by free radical magnetic effects. The Relative Atomic Masses for Selected Radioisotopes are also tabulated.

This report by Commission II.1 is expected to be published in *Pure & Applied Chemistry* in July 1983.

Isotopic composition of the elements 1981

The Commission's biennial review of isotopic compositions as determined by mass spectrometry has been undertaken by the Subcommittee for the Assessment of Isotopic Composition (SAIC). A critical evaluation of the published literature forms the basis of the Table of Isotopic Compositions and Atomic Weights as Determined by Mass Spectrometry 1981, which is presented here. Atomic weights calculated from the tabulated isotopic abundances are generally consistent with $A_r(E)$ values in the Table of Standard Atomic Weights 1981 with the most notable exceptions being the elements zinc, germanium and selenium, where the uncertainty intervals just meet or barely overlap.

This report by Commission II.1 is scheduled to be published in *Pure & Applied Chemistry* in July 1983.

Half-wave potentials of electroactive substances in hexamethylphosphoric triamide

After a brief review of the characteristic properties of hexamethylphosphoric triamide (HMPA) as a solvent for electroanalytical use, half-wave potentials of various inorganic and organic electroactive substances in HMPA have been compiled.

HMPA is an aprotic solvent with very strong basicity and extremely weak acidity. It is convenient for cathodic reductions. The cathodic potential limit at a platinum electrode is determined by the generation of solvated electrons from the electrode. Many metal ions are solvated strongly in HMPA and their reductions are influenced significantly by the cation of the supporting electrolyte, if they are reduced at negative potentials. Univalent radical anions, produced by the reductions of organic compounds and dissolved oxygen, are fairly stable in HMPA. HMPA, however, easily forms small amounts of its peroxide when exposed to light in the presence of oxygen. It must be used with care because it may be toxic.

This Commission V.5 technical report is expected to appear in *Pure & Applied Chemistry* in August 1983.

Results of a collaborative study on the determination of polar compounds in frying fats

The increasing consumption of fried food products calls for the development of criteria for the evaluation of palatability of used frying fats. Health authorities in many countries are dealing with this problem.

During deep fat frying various chemical processes such as oxidation, hydrolysis, polymerisation, cyclisation and cracking can take place and fats decompose with the formation of volatile, monomeric, and polymeric compounds. Their amounts and chemical structures depend on the fat blend, the temperature, the frying time, the frying food and to a high degree on the accessibility of oxygen.

To assess the deterioration of used frying fats, Commission VI.3 studied collaboratively various methods for the analysis of heated fats. The Commission decided to adopt a column chromatographic method by G. Guhr and A. K. Sen Gupta for the determination of polar compounds in frying fats. Frying fats are separated by this procedure into non-polar and polar compounds using silica gel as adsorbent. Non-polar compounds are mostly unaltered triglycerides; polar compounds include polar transformation products formed during frying or heating and polar compounds such as monoglycerides, diglycerides and free fatty acids which occur in unused fats. The efficiency of the fractionation can be assessed by thin layer chromatography. The method is short and easy to handle and allows a good separation of the unaltered triglycerides from the polar material. Since there is a good correlation between the degree of degradation and the content of polar compounds the method can be used for the evaluation of the quality of used frying fats.

The full text of the method has been published in *Pure & Applied Chemistry*, Vol. 54, No. 1, pp. 242–245 (1982). The method will be included as No. 2.507 in the *Standard Methods for the Analysis of Oils, Fats and Derivatives*. The results of the collaborative study are being published in *Pure & Applied Chemistry* in August 1983.

Nomenclature and symbolism for amino acids and peptides (Provisional)

These recommendations combine and extend four separate sets of earlier recommendations, on α -amino-acid and peptide nomenclature, on symbolizing peptides by both the 3-letter and 1-letter residue designations, and on designating derivatives of those peptides that possess names. The trivial names of common amino acids are listed, and principles for modifying these names to designate derivatives and

peptides are described. The sections on stereochemistry and ionized forms of the recommendation on amino-acid nomenclature are expanded, using the *RS* system to designate chiral centres in the side chain, and using the prefix *ambo* in specifying mixtures of diastereoisomeric peptides. Some new symbols are introduced in the section on representing residues with 3-letter symbols, and recommendations for designating ionized forms of peptides are given. Modifications of named peptides that can be designated now include their enantiomers and peptides of reversed sequence.

This report, prepared by the Joint Commission on Biochemical Nomenclature will be published in *Pure & Applied Chemistry* at the end of 1983. Comments should be sent, within eight months of the date of publication, to Dr. A. Cornish-Bowden, Department of Biochemistry, University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, UK.

Abbreviations and symbols for the description of conformations of polynucleotide chains (*Provisional*)

General principles of notation are first described, defining chain direction and the nucleotide unit, and specifying nomenclature for atom numbering, bond lengths, bond angles, torsion angles and conformational regions. The description of conformations for the bonds of the nucleotide unit is then given in detail for the sugar-phosphate backbone, the sugar ring, the *N*-glycosidic bond and the orientation of side groups. Recommendations are also made for the description of hydrogen bonds, base pair schemes and helical segments of polynucleotide chains. General examples of conformations are illustrated. The proposed nomenclature is consistent with that recommended for conformations of polypeptides and polysaccharides.

This report, prepared by the Joint Commission on Biochemical Nomenclature, will be published in *Pure & Applied Chemistry* in August 1983. Comments should be sent to Dr. A. Cornish-Bowden, Department of Biochemistry, University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, UK, within eight months of the date of publication.

Symbols for specifying the conformation of polysaccharide chains (*Provisional*)

The notation for atomic numbering, interatomic distances, bond angles and ring shapes are described, and the rules for defining conformation of various side groups are discussed and illustrated. Residues

are numbered from the reducing end, so that terminal transglycosylation does not alter the numbering of every residue in a chain. The glycosidic swivel joints are designated and the convention for torsion angles is given.

This provisional report, prepared by the Joint Commission on Biochemical Nomenclature, will be published in *Pure & Applied Chemistry* in August 1983. Comments should be sent to Dr. A. Cornish-Bowden, Department of Biochemistry, University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, UK, within eight months of the date of publication.

Definition of pH scales, standard reference values, measurement of pH and related terminology (*Provisional*)

This document deals with definitions, procedures and terminology for the quantity pH which is of wide interest for chemists, biologists and engineers. It is the result of discussions since 1977 in IUPAC and related discussions in other international bodies. It constitutes in the definition of pH scales a compromise which recognises the advantage of both the previously endorsed multi-standard approach and that based on the definition of a single standard with associated operational standards.

Potassium hydrogen phthalate is adopted as reference value standard (RVS) at specified molality of 0.05 mol kg⁻¹, and pH(RVS) values are given for 0–95°C. Six primary standards (PS) with pH(PS) values determined from cells without liquid junction are designated, along with 15 operational standards (OS) where pH(OS) values are determined by direct comparison with the RVS in cells with liquid junction, where the liquid junctions are formed in 1 mm diameter vertical capillary tubes. Recommendations are made for the measurement of pH.

This report, prepared by Commissions I.6 and V.5, is expected to be published in *Pure & Applied Chemistry* in Autumn 1983. Comments should be sent to Dr. A. K. Covington, Electrochemistry Research Laboratories, Department of Physical Chemistry, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, UK, within eight months of the date of publication.

Extension of rules A-1.1 and A-2.5 concerning numerical terms used in organic chemical literature (*Provisional*)

Numerical terms are used in chemical names for indicating a number of identical structural units in a compound. Rule A-1.1 of the IUPAC Organic Nomenclature Rules illustrates the numerical terms up to 199 in the names of saturated unbranched

acyclic hydrocarbons. The use of these numerical terms for expressing identical substituents to a parent structure, and their modifications for use with "complex" substituents, is described in Rule A-2.5.

Recently a desire has been expressed for numerical terms higher than 199. This document provides the necessary guidance, based on principles already established, for generating numerical terms up to

9999 by using the infixes "-cta-" (for the hundreds digits) and "-lia-" (for the thousands digits) in a way quite analogous to the use of "-conta-" for the tens digits beyond twenty.

This report by Commission III.1 is expected to be published in *Pure & Applied Chemistry* in September 1983.

IUPAC CONFERENCES

Additional information from address in parentheses

1983

PROPERTIES OF COPOLYMERS

July 11 - 14. 24th Prague Microsymposium: Copolymers, Structure and Solution Properties. Prague, Czechoslovakia.

(Dr. P. Kratochvil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

BORON CHEMISTRY

July 11 - 15. Imeboron V (Organic and Inorganic). Swansea, Wales, UK.

(Prof. A. Pelter, Department of Chemistry, University College of Swansea, Singleton Park, Swansea, West Glamorgan SA2 8PP, UK.)

ANALYTICAL CHEMISTRY

July 17 - 23. SAC 83 Conference and Exhibition. Organized by the Analytical Division of the Royal Society of Chemistry, University of Edinburgh, Edinburgh, UK.

(Dr. J. M. Ottaway, Department of Pure & Applied Chemistry, University of Strathclyde, Cathedral Street, Glasgow G1 1X1, UK.)

POLYMER STABILITY & PROCESSING

July 18 - 21. 25th Prague Microsymposium: Processing and Long-Term Stabilities of Hydrocarbon Polymers. Prague, Czechoslovakia.

(Dr. J. Pospíšil, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, Heyrovského n. 2, 162 06 Prague 616, Czechoslovakia.)

TOXICOLOGY OF METALS

July 20 - 23. 2nd International Symposium on Clinical Chemistry and Chemical Toxicology of Metals. Montreal, Canada.

(Dr. J. Savory, University of Virginia Medical Center, Department of Pathology, Box 168, Clinical Laboratories, Charlottesville, VA 22908, USA.)

PLASMA CHEMISTRY

July 24 - 28. 6th International Symposium on Plasma Chemistry. Montreal, Canada.

(Prof. M. Boulous, Département de génie chimique, Faculté des sciences appliquées, Université de Sherbrooke, Sherbrooke, Québec, Canada J1K 2R1.)

IUPAC GENERAL ASSEMBLY

August 18 - 26. 32nd IUPAC General Assembly. Lyngby/Copenhagen, Denmark.

CHEMICAL EDUCATION

August 21 - 26. 7th International Conference on Chemical Education "Chemistry Education and Society". Montpellier, France.

(Prof. M. Chastrette, Laboratoire de Chimie Organique Physique, Université Lyon I, 43, Bld du 11 Novembre 1918, 6922 - Villeurbanne, France.)

HETEROCYCLIC CHEMISTRY

August 21 - 26. 9th International Congress of Heterocyclic Chemistry. Tokyo, Japan.

(Yuichi Kanaoka, Faculty of Pharmaceutical Sciences, Hokkaido University Sapporo, 060 Japan.)

ORGANOMETALLIC CHEMISTRY

August 28 - September 1. 2nd IUPAC Symposium on Organometallic Chemistry directed toward Organic Synthesis. Dijon, France.

(Prof. J. Tirouflet, Université de Dijon, Boite Postale 138, 21004 Dijon Cedex, France.)

MICROCHEMICAL TECHNIQUES

August 28 - September 2. ISM '83, 9th International Symposium on Microchemical Techniques. Amsterdam, The Netherlands.

(Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam, The Netherlands.)

CATIONIC POLYMERIZATION

August 30 - September 2. 6th International Symposium on Cationic Polymerization and Related Processes. Belgium.

(Prof. E. Goethals, Institute of Organic Chemistry, Rijksuniversiteit-Gent, Krijgslaan 281 (S-4) B-9000 Ghent, Belgium.)

FOURIER TRANSFORM SPECTROSCOPY

September 5 - 9. International Conference on Fourier Transform Spectroscopy. Durham, UK.

(J.R. Birch, Division of Electrical Science, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK.)

MACROMOLECULES

September 5 - 9. 29th International Symposium on Macromolecules. Bucharest, Romania.
(Acad. Cristofor Simionescu, Institutul de Chimie Macromoleculară Petru Poni Aleea Grigore Ghica Vodă Nr. 41A, Iași, Romania.)

PHOSPHORUS CHEMISTRY

September 5 - 9. International Conference on Phosphorus Chemistry. Nice, France.
(Prof. J. G. Riess, Laboratoire de Chimie Minérale Moléculaire, Université de Nice, Parc Valrose, 06034 Nice, France.)

CRYSTAL GROWTH

September 12 - 16. 7th International Conference on Crystal Growth, ICCG-7. Stuttgart, FRG.
(Prof. Dr. M. Pilkuhn, Universität Stuttgart, Pfaffenwaldring 57, 7000 Stuttgart 80, FRG.)

MOSSBAUER EFFECT

September 26 - 30. International Conference on Applications of the Mossbauer Effect. Alma Ata, USSR.
(Prof. V. I. Goldanskii, Institute of Chemical Physics, Academy of Sciences of the USSR, Kosygin Street 4, Moscow 117977 SZD 1, USSR.)

ORGANOMETALLIC CHEMISTRY

October 10 - 14. 11th International Conference on Organometallic Chemistry. Pine Mountain, GA, USA.
(Dr. E. C. Ashby, School of Chemistry, Georgia Institute of Technology, Atlanta, GA 30332, USA.)

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BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.
(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.
(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.
(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

MEDICAL POLYMERS

July 9-12. 26th Prague Microsymposium on Macromolecules: Polymers in Medicine and Biology. Prague, Czechoslovakia.
(26th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.
(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

MACROMOLECULES

July 16-19. 27th Prague Microsymposium on Macromolecules: Physical Optics of Dynamic Phenomena and Processes in Macromolecular Systems. Prague, Czechoslovakia.
(27th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

COORDINATION CHEMISTRY

July 29-August 3. 23rd International Conference on Coordination Chemistry. Boulder, CO, USA.
(Prof. R. E. Sievers, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Campus Box 449, CO 80309, USA.)

CHEMICAL THERMODYNAMICS

August 13-17. Conference on Chemical Thermodynamics. Hamilton, Canada.
(Dr. P. A. G. O'Hare, Argonne National Laboratory, Chemical Technology Division, 9700 South Cass Avenue, Argonne, IL 60439, USA.)

ORGANIC CHEMISTRY

August 20-24. 7th IUPAC Conference on Physical Organic Chemistry. Auckland, New Zealand.
(Prof. B. R. Davis, Chemistry Department, University of Auckland, Private Bag, Auckland, New Zealand.)

RAMAN SPECTROSCOPY

August 27-September 1. 9th International Conference on Raman Spectroscopy. Tokyo, Japan.
(Prof. Mitsuo Tasumi, Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.)

REACTIVITY OF SOLIDS

August 27-September 1. 10th International Symposium on the Reactivity of Solids. Dijon, France.
(10e ISRS, Secrétariat Exécutif, Laboratoire de Réactivité des Solides, Faculté des Sciences Mirande, B.P. 138, F-21004 Dijon Cédex, France.)

AUTOMATION

October 15-18. 2nd International Congress on Automation in the Clinical Laboratory. Barcelona, Spain.
(The Secretary of the Second Congress, Dr. R. Galimay, Apartado de Correos 543, Barcelona, Spain.)

COLLABORATIVE CHEMICAL ANALYSIS

October 25-27. 2nd International Symposium on the Harmonization of Collaborative Analytical Studies. Washington, DC, USA.
(Dr. H. Egan, Laboratory of the Government Chemist, Cornwall House, Stamford Street, London SE1 9NQ, UK.)

POLYMER ANALYSIS

February 11–14. **POLYMER 85: Characterization and Analysis of Polymers.** Melbourne, Australia.
(Dr. J. H. O'Donnell, Polymer & Radiation Group, Department of Chemistry, University of Queensland, Brisbane 4067, Australia.)

AROMATIC COMPOUNDS

July 15–19. 5th International Symposium on Novel Aromatic Compounds. St. Andrews, UK.
(Dr. P. J. Garratt, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK.)

MACROMOLECULES

August 18–23. 30th International Symposium on Macromolecules. The Hague, Netherlands.
(Dr. J. A. M. Smit, Gorlaeus Laboratories, University of Leiden, Department of Chemistry, P.O. Box 9502, NL - 2300 RA Leiden, Netherlands.)

MASS SPECTROMETRY

September 8–13. 10th International Symposium on Mass Spectrometry. Swansea, UK.
(Prof. J. H. Beynon, Royal Society Research Unit, University College of Swansea, Swansea SA2 8PP, UK.)

CHEMICAL RESOURCES OF THE OCEAN

September 22–28. Chemical Resources of the Global Oceans — **CHEMRAWN IV.** Massachusetts, USA.
(J. R. Moore, Director, Marine Science Institute, University of Texas, Austin, TX 78712, USA.)

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PESTICIDE CHEMISTRY

August 10–17. 6th International Pesticide Chemistry Congress. Ottawa, Canada.
(Dr. H. V. Morley, London Research Station, Agriculture Canada, University Sub-Post Office, London, Ontario, Canada.)

PHYSICAL ORGANIC CHEMISTRY

August. 8th IUPAC Conference on Physical Organic Chemistry. Tokyo, Japan.
(Prof. M. Oki, Department of Chemistry, Faculty of Science, University of Tokyo, Tokyo 113, Japan.)

New nomination for Elected Members of Bureau.

Prof. A. J. Arvía was born in Argentina in January 1928. He was awarded his Doctorate in Chemistry in 1952 by the National University of La Plata. He was appointed Professor in General Chemistry at the University of Buenos Aires in 1958 but moved to the National University of La Plata in 1960 as Professor of Industrial Electrochemistry, later, in 1968, becoming Professor of Physical Chemistry.

He has for some years been Director of the Multi-national Chemical Programme of the Organization of American States and of the Instituto de Investigaciones Fisicoquímicas Teóricas y Aplicadas, La Plata. He has served on many national and international committees, including being President of the Advisory Committee on Chemical Sciences of the Argentine National Council on Scientific and Technical Research.

Prof. Arvía has been Argentine National Representative on Commission I.3 since 1980.

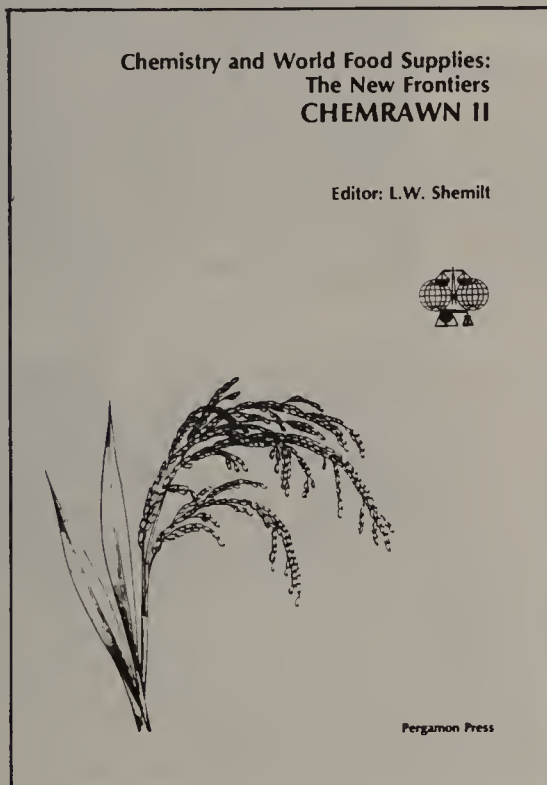
Prof. R. L. Martin, during 1960–1962, was Associate Research Manager with ICI (Australia and New Zealand), then Professor in Inorganic Chemistry at the University of Melbourne. In 1972 he moved to the Institute of Advanced Studies at the Australian National University and from 1977 has been Vice-Chancellor at Monash University.

Prof. Martin has been a Titular Member on Commission II.1 since 1975 and its Secretary since 1979, as well as being a Member of the Australian Delegation to all recent IUPAC General Assemblies.

Prof. Martin has been a Titular Member on Commission II.1 since 1975 and its Secretary since 1979, as well as being a Member of the Australian Delegation to all recent IUPAC General Assemblies.

CHEMISTRY IN ACTION

New & Forthcoming Books on Applied Chemistry



Proceedings of the International Conference on Chemistry and World Food Supplies, Manila, Philippines, December 1982

Edited by **L W SHEMILT**, *McMaster University, Hamilton, Ontario, Canada*

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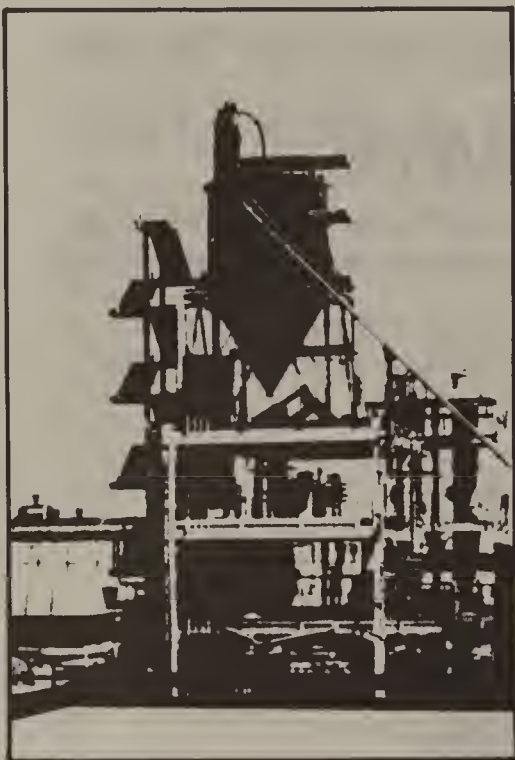
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Chemistry International

is the news magazine of the

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The International Union of Pure and Applied Chemistry (IUPAC), formed in 1919, is a voluntary, non-governmental, non-profit association of organizations, each of which represents the chemists of a member country.

Its objectives are:

to promote continuing co-operation among the chemists of the member countries;

to study topics of international importance to pure and applied chemistry which need regulation, standardization, or codification;

to co-operate with other international organizations which deal with topics of a chemical nature;

to contribute to the advancement of pure and applied chemistry in all its aspects.

The membership of IUPAC presently comprises 44 countries, each represented by a national organization, such as an academy of science or research council.

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Chemistry International

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)



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Front cover: The Delegations vote at the 32nd IUPAC General Assembly Council Meeting.

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Prof. S. Nagakura congratulates Dr. W. G. Schneider on his assumption of the Presidency of the Union



The new Officers of the Union — Prof. S. Nagakura (Past President), Prof. T. S. West (Secretary General), Dr. W. G. Schneider (President), Prof. C. N. R. Rao (Vice-President) and Prof. A. Björkman (Treasurer)

The 32nd General Assembly of IUPAC has come and gone. In the August issue (No. 4) of *Chemistry International* (CI) we tried to inform you in advance of some of the important issues to be decided at Lyngby — and it was a great relief to find that, in spite of an unexpected hold-up in the final stages, many of you received your copy before leaving for Denmark. That issue was produced ahead of schedule, this one will be late because, once again, the main topic is the General Assembly — reports by the Union's Officers, Standing Committees and Division Presidents to the Council and a first batch of Summary Minutes. With regard to these, the response to my appeal for minutes before the end of the General Assembly was so overwhelming that I have had to hold some back for the next issue. May I express my gratitude to all those who provided their minutes so promptly, my apologies to those whose efforts have had to be held back and, finally, my hope that the Vice-President will not, in his critical assessment, judge the efficiency of any IUPAC body by whether its Lyngby minutes appeared in the October or December issues of CI.

I am afraid that all this factual reporting will not make compulsive reading for those of you not especially interested in IUPAC and its affairs but CI is the IUPAC News Magazine and this is IUPAC news! To try to offer some relief, however, there are some pictures of people, and the first of what I hope, under the Editorial Advisory Board system, will be many articles on the background to work in IUPAC Commissions — Dr. Krogh's paper on poisonous shellfish. We also have our first 1983 Letter to the Editor.

To return to the General Assembly, the first I have attended with the opportunity to roam outside the boundaries of a Division, to see what goes on behind the scenes and, thanks to the indulgence of the Chairmen involved, to attend meetings and joint meetings of bodies that I have heard of but never before seen at work. From this experience I was convinced that the hard work and dedication to the objectives of IUPAC that, from past observation, I knew was to be found within Divisions and Commissions extends throughout the Union. There may be argument and criticism but it seems to be generally good-humoured and constructive — and therefore useful. Behind the scenes — it would hardly be proper for me to dwell on the long hours put in by the Secretariat staff but I must place on record the splendid cooperation and willing help afforded by the young Danes at the registration desk, the photocopiers, the typewriters, etc. I cannot make comparisons (fortunately!) but Prof. Kjaer and Dr. Harnung (photograph, p. 43) may be assured that the standard achieved will be hard to beat.

And so we start another IUPAC biennium. I hope that in the next issue of CI we will have the benefit of the new Secretary General's conclusions on the results of the Bureau and Council meetings and what they mean for the future of the Union (not to mention of CI itself). In the meantime I hope you will find the list of names and addresses of the Officers of the Union and of its Committees, Divisions and Commissions helpful. They are in the centre pages so that they can be found easily or, possibly, cut out for ready reference.

Welcome to Copenhagen

Mayor Charlotte Ammundsen greeted the participants at the 32nd IUPAC General Assembly to a reception at the Copenhagen City Hall on 22 August 1983. Her speech of welcome is reproduced below.

Ladies and gentlemen!

On behalf of the Copenhagen City Council, I have great pleasure in welcoming you in the City Hall. I welcome you as a member of the Magistrate of the City of Copenhagen. As you might have been told, we have seven members in the Executive of Copenhagen — the Lord Mayor and six Mayors with different departments and duties.

I understand that IUPAC represents chemists from nearly all countries, and that the work of the Union includes all aspects of chemistry. For instance, standardization, nomenclature, education, research and global investigations of resources, pollution, etc.

As Mayor of the 5th Department in the Executive of Copenhagen, I am responsible for the protection of the environment, for control of food, for the supply of water and for the power plants in Copenhagen. In these sectors we are very interested in many of IUPAC's activities. For instance, it is extremely important that we have internationally accepted standard methods for measuring air pollution and for analysing water and food.

Education is also very important. In this area I especially feel a need of more education in chemistry for the general population. This will give the population better understanding of environmental problems and give people in general better possibilities to take part in the pollution debate.

Your work, coordinating greater research projects, is important. Being responsible for both protection of the environment and for power plants I can, for instance, mention the pollution from power



Miljøborgmester Charlotte Ammundsen

plants. Global pollution problems from coal- and oil-fired power plants, and from other sources, can only be solved through international cooperation. The fact, as each country knows, that their contribution to global pollution is only a certain percentage, gives the politicians an excuse to do nothing — unless other countries are taking the same initiatives. This emphasizes the necessity of international cooperation to solve pollution problems. Your work is an important aspect in solving these problems. But it is even more important to bring this understanding up to political level.

We appreciate your work advising other international organizations concerned with chemical problems, for instance WHO and FAO, whose work is important for us.

We hope that the work of IUPAC will be crowned with success, and I hope that your programme will allow you some spare moments in which you can take a look at our city. I hope that those of you who have not been here before, may feel tempted to come again some other time and get better acquainted with Copenhagen.

So once again: welcome to Copenhagen and welcome to the City Hall.

REPORTS TO THE COUNCIL OF OFFICERS AND STANDING COMMITTEES

LYNGBY, AUGUST 1983

The IUPAC President has, according to Statute S6.23, to submit a report on the general state of the Union to the Council at each regular meeting (General Assembly) and the Council have (Statute S5.406) to receive and consider this report. It also has to consider the accounts of the Union (S5.408) and establish a budget (S5.409), both the responsibility of the Treasurer (S6.51). The reports of these two Officers, and of Standing Committees, are reproduced — slightly edited — below. The biennial reports of the Division Presidents will be found on pp. 15–41.

Report by the President on the State of the Union

It is my great pleasure to report as President on the present state of the Union at the 32nd IUPAC General Assembly in Lyngby.

At the last General Assembly, which was held in Leuven in 1981, the then President, Prof. H. Zollinger, presented several problems confronting the Union and at the same time proposed some new counterplans based on his energetic analysis of IUPAC activities at that time and also on his deep insight into the future direction of the development of our Union. For the last two years, I have made efforts to promote IUPAC activities following the fundamental lines set up by Prof. Zollinger. I would like to take this opportunity to pay my deepest respect and express my gratitude to him.

The main problems confronting the Union, excluding financial difficulties, can be summarized under four points:

1. To open ways for as many chemists as possible to participate in IUPAC affairs.
2. To make the traditional activities of various IUPAC bodies more substantial and more efficient.
3. To introduce new roles which IUPAC should play in relation to human society.
4. To disseminate information of IUPAC activities accurately and effectively among as many chemists as possible and to deepen their interests in the Union.

The first problem consists of several items, the Affiliate Membership Scheme, a limitation of total service for an individual in IUPAC, and Observer Country status.

The Affiliate Membership Scheme was discussed at the Council Meeting in Leuven in 1981. The objective is to maximize participation of individual



Prof. S. Nagakura, IUPAC President

chemists throughout the world in IUPAC affairs. A Committee on Affiliate Membership, set up after the Council meeting in Leuven, has actively worked under the leadership of Prof. T. S. West. I would like to express my sincere thanks to the members of the Committee, in particular Prof. West, for their continuing efforts in drawing up a detailed plan overcoming a number of difficult matters: non-interference with the National Adhering Organizations, non-interference with National Chemical Societies, privileges for the Affiliates, financial aspects of the Scheme, etc.

In addition to the study by the Committee, the Affiliate Scheme has been discussed by the Bureau, Executive Committee, and Finance Committee. A circular entitled *IUPAC Seeks Your Reaction to Proposed Participation of Individual Member Chemists*

was sent to all National Adhering Organizations for information in June 1982. I strongly hope that the Affiliate Membership Scheme will be approved by the Council in Lyngby and become operative with effect from January 1985.

Wider participation of the world's chemists, particularly young ones, in IUPAC affairs was discussed at the 31st Meeting of Council in Leuven in connexion with the proposal from FRG about a limitation of total time in office for one person on various IUPAC bodies. Following the decision by Council in 1981, a Committee with Prof. Zollinger as Chairman was appointed to examine the proposal for a limitation of total service for an individual in IUPAC. Taking the opinions of the Division Presidents into account, the Committee made a definite recommendation. The Executive Committee discussed this recommendation at its Meeting in Tokyo earlier this year and resolved to ask the Bureau to adopt it as guidelines for 1983–1985.

I feel that it is now time for our Union to overcome the criticism of 'exclusive club' or 'charmed circle' by introducing in due course both the Affiliate Membership Scheme and the new guidelines for limitation of total service in IUPAC.

As you may know, the new membership category of 'Observer Country' was introduced in 1981 for the purpose of promoting participation of developing countries in IUPAC affairs. It is my pleasure to report that our Union has welcomed in 1982 the Chemical Society of Thailand as its first such member. With five more new members in 1983, the introduction of Observer Country status is already seen to be successful from the viewpoint of extending participation of chemists throughout the world in IUPAC affairs.

The second main problem is concerned with the efficiency of IUPAC work and consists of two important items. One of them is the statutory critical assessment of IUPAC projects and programmes by the Vice-President and the other is the critical review of the present staffing and workload of the Secretariat.

During 1982–1983 Dr. W. G. Schneider, Vice-President of our Union, has conducted successfully the critical assessment through the use of project progress and project initiation questionnaires for all IUPAC bodies. His report, including recommendations on the five Commissions suspended at the Council Meeting in Leuven in 1981, was discussed at the Executive Committee meeting in Tokyo and highly appreciated by the Committee.

As the President of IUPAC, I would like to congratulate our Vice-President for the excellence of his report and to extend my thanks to the Division Presidents and Committee and Commission Chairmen for their cooperation. It is my hope that the critical assessment will be frankly accepted by all IUPAC bodies and will be of use for focusing, if necessary, their projects and programmes to raise efficiency and for reactivating some sleeping bodies.

The present status of the IUPAC Secretariat was reviewed by Prof. West and recommendations for reorganization were made. The Executive Committee approved the recommendations, including various delegations of responsibility, discontinuation of some work responsibilities, possible mechanization of office tasks by introducing a small computer with

word processor facility, etc. In this connexion I would like to report to you that Miss Ann Troughton was appointed Deputy Executive Secretary with progressive absorption of some duties from Dr. M. Williams who had been overloaded with too many duties.

At present we have a number of worldwide problems to be solved mainly from the chemical aspect, which are essential for promotion of human welfare and future development of the human society. The third main problem comes from this recognition. The most important activity of IUPAC in this respect is CHEMRAWN (Chemical Research Applied to World Needs). It is well known that the 1st CHEMRAWN Conference on *Future Sources of Organic Raw Materials*, held in Toronto in 1978, was successful and fruitful. The 2nd CHEMRAWN Conference on *Chemistry and World Food Supplies: the New Frontiers*, held in Manila in December 1982, was also successful scientifically and financially, and had over 600 participants from 45 countries.

These successes brightened the future of CHEMRAWN and I have an impression that this new activity has planted its roots deeply in IUPAC. On this occasion, I would like to pay my respect and to express my thanks to the CHEMRAWN Committee members, particularly to the Chairman, Dr. B. W. Rossiter. We might not have the present success of CHEMRAWN without his enthusiasm and self-sacrificing efforts.

Here it may be mentioned that the Committee on Teaching of Chemistry and the Committee on Chemistry and Industry, as well as some Divisions like the Applied Chemistry Division and Clinical Chemistry Division, have taken part in IUPAC activities to promote human welfare and to deepen the relationship with outside communities including chemical industry. Frankly speaking, it may be desirable that the Applied Chemistry Division will be reorganized in future to promote its activity in this line.

Let us turn to the fourth problem — to disseminate IUPAC information among as many chemists as possible and to deepen their interests in IUPAC. This is mainly related to the IUPAC publications, in particular the news magazine *Chemistry International*, which started in 1980. Its trial period of 3 years was reviewed by the Bureau in 1982 coming to the judgement that the original objective — to publicize IUPAC activities in a readable and interesting format both inside and outside the Union — had not yet been achieved. Mr. R. W. Fennell was appointed part-time editor at the end of 1982 to undertake a stop-gap activity for 1983, pending a Council decision on the Affiliate Membership Scheme.

The publication policy of the Union has been discussed from various aspects, including the relationship between dissemination and prices of IUPAC publications (wide dissemination with low prices or narrow dissemination with high prices), rapidity of publication, etc. Because of the complexity of the problem, it may be necessary to continue discussion further, also taking the formation of an ICSU Press into account. I have highly appreciated the activities of the Committee on Publications, particularly the efforts made by its Chairman, Dr. D. P. den Os, to whom my sincere gratitude is due.

For better publicity of IUPAC activities, it is important to deepen the relationship of our Union with various National Chemical Societies, and we have invited Chemical Society Presidents as observers to the Council meeting in Lyngby.

I fear that my report has spared too much space for new activities of the Union compared with its traditional ones. Needless to say, however, the strengths of the Union largely lie in the traditional activities of the Divisions, Committees, and Commissions, supported by the voluntary activities of internationally outstanding specialists and highly appraised as being authoritative throughout the world.

IUPAC, as the only international organization in pure and applied chemistry, has had deep concern in promoting 'Internationality of Chemistry'. It is an important policy of the Union that all IUPAC scientific meetings are open to participation by bona fide chemists from all countries without regard to the political situations of the governments involved. In the past the Union has striven to keep this policy and has been able to ensure the granting of an entry visa when the rules (3 months for prior submission of visa application, 1 month for report to IUPAC if not granted) have been followed. In view of an incident on the occasion of the 28th International Symposium

on Macromolecules last year, I have a strong feeling that under the present political situation more efforts should be made for keeping our traditionally important policy of free exchange of bona fide chemists.

I would like to close my report with my sincere thanks to all members of the Union who were active in Divisions, Committees, and Commissions, and in particular to the members of the Bureau and Executive Committee for their kind cooperation. It was my real pleasure to work with Dr. W. G. Schneider — Vice-President, Prof. G. Ourisson — Secretary General, Dr. W. Graulich — Treasurer, and Prof. T. S. West — Assistant Secretary General. My hearty thanks are due to them. I have highly appreciated the excellent work carried out at our Secretariat in Oxford under the guidance of Dr. M. Williams. I would like to extend my sincere thanks to him and his colleagues for their continuous efforts for the Union. Finally my thanks are due to the Danish National Committee for Chemistry for its kind cooperation in hosting the 32nd General Assembly and for its strenuous efforts in making arrangements for the meeting.

S. Nagakura
President

Biennial Report of the Treasurer (1981/1982)

Prof. Horn, in his last biennial report, advised the Union Treasurer to be very careful in future because of growing costs, especially for General Assemblies. In my first biennial report (1979/1980) it could be seen that indeed the inflation rate in all countries made it necessary to think about a new structure of the dues to be paid by NAOs and CAs.

The costs of Davos (1979) were much higher than those of Madrid (1975) and Warsaw (1977), although not higher than estimated. I do not intend to repeat details of my report (1979/1980) but the questions discussed in Leuven have been pursued and will be mentioned here. First I would like to say that the changes of the costs of the 31st General Assembly in Leuven in comparison with the costs of the meeting in Davos showed the way to operate in future. It is necessary to locate Assemblies in university towns to lower the costs, especially when the rooms of the campus can be used. The budget for Leuven was fixed in the Finance Committee (Zürich, February 1981) at US\$225 000. Although the number of delegates was unexpectedly high, the costs were US\$217 098, that is they were within the budget. It should be mentioned here that the Belgian Government in 1983 gave an additional grant of US\$20 000 for travelling costs. We have to thank the Government for their support, also our former President Prof. G. Smets, who started the necessary actions.

After Leuven the Finance Committee and the Treasurer (not to mention the Oxford Secretariat) had a lot of work explaining the details of the new dues structure to some NAOs and some CAs. In this



Dr. W. Graulich, Treasurer

field Prof. Björkman at first and later Dr. Wilson have invested a lot of work. It should be borne in mind that we now have more categories and that the Council gave the advice to examine thoroughly the proposal, of the NAO-UK, to consider chemical turnover as a basic figure, but by a new formula, to

come out with a sliding scale. This question seems to be solved and will be presented at the Lyngby General Assembly. The Subcommittee, formed to discuss this matter with delegates of those countries dissatisfied with the chemical turnover figures used by IUPAC as the basis for the dues invoices, met once in the beginning of 1982 in Leverkusen (two members of COCI, two of Finance Committee, Dr. Williams and the Treasurer as Chairman). Only a few members had indicated an opposite point of view in their letters so the Subcommittee and Finance Committee gave their feelings for decision to the Executive Committee. Later on we had some slight opposition which we tried to solve by correspondence.

One point of discussion in recent years was the question whether our money had been invested in the right funds. Here, because of the high interest on US investments, we changed our policy over the last three years. The results are visible in the reports of the auditors after examination of the financial statements as of 31 December 1981 and 1982. The Finance Committee had been discussing these questions for years, and we reported some conclusions at Leuven. Recently, Dr. Wilson has pursued this point with great energy. Dr. Hartmann, when a member of the Finance Committee, proposed to change our investment policy to a more flexible approach. When the stock market declined, we sold nearly all shares out of our portfolio and invested in high yielding short-term deposits and bonds. At the same time we switched from the Deutschmark and Swiss franc to the US-dollar. The aim was to protect the funds of the Union and to get a high return on the investments. When you read the results of 1981 and 1982 you should remember the strengthening of the US dollar in recent years.

Office expenses are one of our major expenditures. They are paid in pounds, so did not increase as we expected. The biggest bloc of expenses is, however, the travel costs.

We have two points which affect realistic comparison of our funds of 1 January 1983 with those of four years ago. In 1979 the value of the US dollar was much lower than today and, by selling shares out of our portfolio, we have now the market value in our budget whereas formerly we had the lower book value.

The last point which should be mentioned is that by finishing the old-style *Chemistry International* (CI), publications also produced an excellent result. The Treasurer would like to ask IUPAC to make a careful research before starting a new publication instead of CI. There might be a reason for a House Newspaper but IUPAC cannot ask for more money and at the same time make a deficit on publications which might not be necessary. Since the decision to finish CI and since Dr. Gellender left the Oxford Office, IUPAC has a surplus in 1982 of nearly US\$19 000 instead of a budget deficit of US\$22 500. In the annex the financial results are shown as the income and expenditure accounts, and the balance sheet of our auditors Neutra Treuhand, Zürich.

To summarize the results, we have a surplus in both years 1981, + US\$15 030; 1982 + US\$76 629. It seems that in Lyngby we will also stay within our budget of US\$312 800.

IUPAC has to thank the International Council of Scientific Unions (ICSU) for the help which we have received every year, for example, for CHEMRAWN, for the Teaching Committee and other projects. Also, as already mentioned, to the Government of Belgium, and to 'Bayer AG', who paid the costs for the office of the Treasurer. I personally have to thank for good cooperation Prof. Zollinger, Prof. Nagakura and the Division Presidents, the members of Executive Committee and the Bureau, and, especially, the Chairmen and the members of the Finance Committee. Excellent work has been done for me by the Oxford Office, Dr. M. Williams, Miss A. Troughton and their coworkers, and last but not least by Miss A. Mustafa and Mrs. E. Niehaus. For me it has been a honour and a pleasure to hold the office of Treasurer of IUPAC.

W. Graulich
Treasurer

Note: In his verbal report to Council, Dr. Graulich said that all 1981 NAO dues have now been paid in full and that there has been a reasonable response to date from NAOs in 1982 payments under the new dues scheme approved by Council at Leuven, 1981. He added that, in spite of the unexpectedly high attendance of Titular Members, the Lyngby General Assembly costs were approximately in line with the agreed budget.

Auditors' report and accounts

As auditors of the International Union of Pure and Applied Chemistry we have examined the accounts for the years ended 31 December 1981 and 1982, in accordance with the provisions of the Swiss law.

We have come to the conclusion that:

- the balance sheets and statements of income and expenses are in agreement with the books;
- the books of account have been properly kept;
- the financial position and the results of operations are presented in accordance with the principles of evaluation prescribed by the Swiss law and the requirements of the statutes.

As a result of our examination we recommend that the accounts submitted to you be approved.

Neutra Treuhand AG
P. Haller
ppa. **B. Wismer**

Comparative statement of general income and expenditure

Income	1981	1982
Subscriptions National Organizations		
Current year	233 374.75	306 881.28
Outstanding	<u>13 979.00</u>	<u>72 508.00</u>
	247 353.75	379 389.28
Service charges Company Associates		
Current year	71 293.57	4 175.00
Outstanding	<u>0.00</u>	<u>1 300.00</u>
	71 293.57	5 475.00
Interest and dividends earned	62 732.09	62 198.75
Subvention/grants from UNESCO/ ICSU	9 600.00	26 624.00
Transfer from contracts account	0.00	750.00
Transfer from publication account	0.00	18 712.77
Last year's provision for committed expenditure	54 112.71	0.00
Other income		
Contribution to Chem. Ed.		
Newsletter	486.00	2 367.00
CHEMRAWN	6 039.00	5 000.00
UNESCO contribution Gen. Assembly	500.00	0.00
Belgian contrib. Gen. Assembly	0.00	20 663.00
Refund of contribution to Symposia	<u>1 000.00</u>	<u>0.00</u>
	8 025.00	28 030.00
	<u>US\$ 453 117.12</u>	<u>US\$ 521 179.80</u>

Comparative statement of contracts income and expenditure

Income	1981	1982
UNESCO contracts	4 000.00	2 300.00
Transfer from general purpose a/c	27.00	0.00
Balance from last year	11 675.50	4 797.58
Balance to next year		209.42
	<u>US\$ 15 702.50</u>	<u>US\$ 7 307.00</u>

for years ended 31 December 1981 and 1982 (US\$)

Expenditure	1981		1982	
Office expenses				
IUPAC Officers, Divisions and Standing Committees	12 325.55		8 596.78	
Secretariat, Oxford	101 209.00		103 348.00	
Audit, bank fees, other charges	<u>17 741.16</u>	131 275.71	<u>14 537.11</u>	126 481.89
Travel and subsistence allowances				
Meetings other than Gen. Assembly	40 218.12		123 181.01	
General Assembly	<u>217 098.40</u>	257 316.52	<u>1 477.00</u>	121 704.01
Contribution to Symposia		0.00		4 000.00
Exchange differences		3 557.50		14 296.65
Transfer to contracts account		27.00		0.00
Transfer to publication account		14 309.32		0.00
Committed expenditure		1 700.00		60 000.00
Provision for bad debts		0.00		50 000.00
Other expenses				
Contribution to ICSU	6 914.00		6 944.00	
Free Chem. Intl & Membership lists	19 816.59		13 665.55	
Project programmes listing	1 408.00		0.00	
CHEMRAWN	1 762.00		44 691.00	
Miscellaneous	<u>0.00</u>	29 900.59	<u>2 767.00</u>	68 067.55
Excess of income over expenditure		15 030.48		76 629.70
		<u>US\$ 453 117.12</u>		<u>US\$ 521 179.80</u>

for years ended 31 December 1981 and 1982 (US\$)

Expenditure	1981	1982
UNESCO contracts	10 904.92	6 557.00
Transfer to general purpose a/c	0.00	750.00
Balance to next year	4 797.58	
	<u>US\$ 15 702.50</u>	<u>US\$ 7 307.00</u>

Comparative statement of publication income and expenditure

Income	1981		1982	
Publications				
Pergamon	105 738.91		130 588.20	
Elsevier	45.00		17.00	
Secretariat	<u>1 273.00</u>	107 056.91	<u>983.00</u>	131 588.20
Free Chem. Intl & Membership lists		19 816.59		13 665.55
Chemistry Intl travel fund		1 500.00		1 500.00
Last years's provision for committed expenditure		1 887.29		1 700.00
Excess of expenditure over income		14 309.32		0.00
		<u>US\$ 144 570.11</u>		<u>US\$ 148 453.75</u>

Comparative balance sheet as at 31 December 1981 and 1982 (US\$)

Assets	1981		1982	
Cash in bank				
US Dollars	69 227.14		53 331.82	
Sterling	8 694.00		15 762.00	
Swiss Francs	963.00		5 586.00	
German Marks	14 555.00		4 391.00	
Short term deposits	<u>369 000.00</u>	462 439.14	<u>504 000.00</u>	583 070.82
Marketable securities (at cost)		424 476.45		409 602.50
Transitory assets		1707.00		1 567.00
Subscriptions due				
National Organizations	13 979.00		72 817.00	
Service charges	<u>0.00</u>	13 979.00	<u>1 300.00</u>	74 117.00
Contracts account		0.00		209.42
		<u>US\$ 902 601.59</u>		<u>US\$ 1 068 566.74</u>

for years ended 31 December 1981 and 1982 (US\$)

Expenditure	1981	1982
Scientific Editor	1 990.00	0.00
Info. Officer, Asst. Secr. & Typist	73 398.00	61 225.00
Purchases Secretariat from Pergamon	1 887.29	1 929.10
Chem. Intl.& Membership lists	19 816.59	13 665.55
Compilation fees SDS	0.00	10 383.63
Share of Secretariat costs	40 378.00	39 431.00
Chemistry Int. travel fund	3 591.00	1 435.00
Miscellaneous expenditure	3 509.23	1 671.70
Excess of income over expenditure	0.00	18 712.77
	<u>US\$ 144 570.11</u>	<u>US\$ 148 453.75</u>

Liabilities	1981	1982
Capital account	862 199.53	879 447.01
Transitory liabilities	18 357.00	62 223.00
Contracts account	4 797.58	0.00
Provision for bad debts*	0.00	50 000.00
Profit on sold securities	2 217.00	267.03
Excess of income over expenditure	15 030.48	76 629.70
	<u>US\$ 902 601.59</u>	<u>US\$ 1 068 566.74</u>

*See notes to the balance sheet.

Transitory assets		
Swiss computation tax		<u>1 567.00</u>
Subscriptions due		
National Organizations (1981)		
Austria		309.00
National Organizations (1982)		
Argentina	4 400	
Austria	4 400	
Belgium	8 100	
Brazil	8 450	
Bulgaria	112	
Colombia	1 100	
Cuba	550	
GDR	4 400	
Iraq	40	
Italy	16 000	
Malaysia	550	
Netherlands	4 400	
Poland	8 800	
Romania	778	
Spain	6 000	
Turkey	2 200	
Yugoslavia	1 678	
Venezuela	<u>550</u>	72 508.00
Outstanding service charges 1982		
FRG	525	
UK	<u>775</u>	<u>1 300.00</u>
		<u>74 117.00</u>
Transitory liabilities		
Subscriptions paid in advance		2 223.00
Committed expenditure		<u>60 000.00</u>
		<u>62 223.00</u>

Errata

Unfortunately there were two errors in the article on the dues structure in *Chem. Int.*, 1983, No. 4. The first, caused by misinterpretation of the manuscript, occurred on p. 21 where the formula should have been:

$$\frac{NS_i}{TNS} = \frac{(CT_i)^{0.68}}{\sum (CT_i)^{0.68}}$$

The second will have been noticed by readers with a sounder mathematical background than the compiler of the Table on p. 23. They will have concluded that 7 votes by 1 NAO gives a total of 7 (not 6) votes.

We apologise on behalf of X for the above; other errors can be laid at the door of the Editor who will probably be able to come up with some apparently valid reason why they could not be helped.

International Union of Crystallography (IUCr)

The 13th Congress and General Assembly of IUCr will be held at the Congress Centrum Hamburg, 9-18 August 1984. The scientific programme will include invited general lectures, invited oral papers and open Commission meetings. Most contributed papers will be presented in poster sessions. Commercial and non-commercial apparatus will be exhibited and crystallographic data file demonstrations are planned. Further information can be obtained from Gesellschaft Deutscher Chemiker, Abteilung Tagungen, Postfach 90 04 90, D-6000 Frankfurt/Main 90, FRG.

Committee on Publications

Since my last report in 1981 the most significant change in our publications has been in the contents of *Chemistry International*, which from the start of 1983 has been devoted almost exclusively to publicizing IUPAC programmes, activities and personalities. The new style CI is expected to be closer to the role which it was created originally to play in our publishing programme, viz. the news magazine of the International Union of Pure and Applied Chemistry (as in its subtitle). The change was also thought to be necessary in order that the magazine could play its role in the Affiliate Membership Scheme should Council approve its launch in Lyngby. An Editorial Advisory Board has recently been formed, with nominees from all seven Divisions, and will have its first meeting in Lyngby. Each Board Member will provide information on activities and news items of his Division. This kind of structure will hopefully provide the information base, continuity, self-examination procedure and corporate view that should help to ensure the success of CI in the future. Distribution of CI is at present restricted to National Adhering Organizations, Associated Organizations, Company Associates, members of all Divisions/Commissions and paying subscribers (the latter: 934 in 1981; 907 in 1982). Through the above-mentioned scheme its distribution would increase considerably and thereby provide much better economic conditions for its production. The production of CI after Dr. M. Gellender (its first editor) left for Australia was continued without much delay. This was achieved through the help of the present (temporary) editor, Mr. R. W. Fennell, who works on a half-time basis for the magazine.

The change in the official monthly journal *Pure and Applied Chemistry* (PAC) is primarily operational. After the departure of its Scientific Editor soon after the Leuven General Assembly, PAC has been run by the Scientific Publications Secretary, Mr. P. D. Gujral, as its Executive Editor. Efficiency of publication and presentation of material has markedly improved since then. PAC continues to hold the number of paying subscribers (1048 in 1981; 1047 in 1982) in spite of the poor worldwide economic climate when many journals have lost subscribers. Pergamon has agreed to keep the subscription rate in 1984 at the 1983 level. Royalties which IUPAC receives from Pergamon Press in respect of PAC (US\$54 938 in 1981; US\$64 874 in 1982) cover not only its operational expenses but go some considerable way to help balance the publications budget. A latent royalty is the provision by Pergamon of 75 gratis copies of each PAC issue — distributed to NAOs, AOs, Executive Committee and Publications Committee.

Books on critically evaluated data have continued to strengthen our publishing programme. During the biennium seven books on solubility data were published (including two in press which will be published by August) and two books on stability and ionization constants from the Commission on Equilibrium Data. Matters leading to the unfortunate delay in the publication of the volume on chlorine, in the series *International Thermodynamic*



Dr. D. P. den Os, Chairman, Committee on Publications

Tables of the Fluid State, will hopefully be resolved between Pergamon and the Commission on Thermodynamics at Lyngby, if not earlier.

Discussion on whether IUPAC-generated numeric data should be made available online was led at the 1982 meeting of our Committee by Dr. W. G. Schneider, Vice-President of the Union, whose initiative has resulted in the formation of a Subcommittee to study the different aspects. The Subcommittee will hold its first meeting at Lyngby. This topic also figured during the recent IUPAC Congress in Cologne at the symposium 'Chemical Information Flow: At Present and in the Future' organized jointly with ICSU Abstracting Board.

Eight symposia proceedings (mostly main/invited lectures) were published during the biennium through Pergamon Press and a further one through Academic Press. Where Pergamon had become reluctant, agreements were negotiated with other publishers under which the Union will receive royalties. In the past the Union had waived its publishing rights in such cases and left the organizers to make independent publishing arrangements.

Income to the Union from royalties on publications in total was US\$110 045 for sales in 1981 and US\$108 920 (+ £640 from Academic Press) for sales in 1982.

I find it relevant to report that I was invited personally to become a member of a newly established committee, of the International Council of Scientific Unions (ICSU), named the Committee on Publications and Communications (ICSU/COPAC). This committee has prepared a proposal for the creation of a publishing house for ICSU, which eventually was established early in 1983. ICSU Press will mainly work through cooperation with the world's not-for-profit publishers, among which are the well-known

publishing facilities of different national chemical societies.

The complexities of any major publishing programme are enormous and this report could not be complete without acknowledging the contributions of many who have made IUPAC publications a success. I am thankful to my colleagues on the Committee (Dr. S. Maričić, Mr. T. H. G. Michael, Dr. B. Munsch, Dr. D. A. O'Sullivan, Dr. I. A. Williams) and Dr. M. Williams for their expert opinions and critical discussions. My thanks are also due to Mr. R. Fennell who agreed to come back from retirement to

edit CI for some time. The rest of the publications programme is run most effectively and efficiently by Mr. P. D. Gujral and his secretary, Mrs. V. Gomez, for whom I record my sincere thanks. Staff at Pergamon Press — in particular Mrs. C. Baldwin, Mr. J. Edginton and Miss J. Sullivan — deserve commendation for their continuous support.

Dick P. den Os
Chairman

Committee on Publications

FINANCE COMMITTEE

The new dues schedule proposed by Prof. A. Björkman, then Chairman of the Finance Committee, and accepted by Council at Leuven was applied in 1982 and 1983 with few difficulties. Some National Adhering Organizations have not been able to pay in full their dues due to the world-wide recession and internal problems. As a result, the Finance Committee included a new item for uncollected dues of \$50 000 in the 1982 General Purposes Account, \$70 000 in the 1983 General Purposes Budget and \$75 000 in the proposed 1984 General Purposes Budget.

On the positive side, Publications returned a surplus of nearly \$19 000 instead of an expected deficit of \$22 500, expenditures for the IUPAC Secretariat were \$16 000 lower than budgeted and the Belgian government contributed a \$20 000 subsidy towards the Leuven meeting.

For 1981 and 1982 IUPAC had a surplus of \$92 000 and we project a deficit of \$90 500 for 1983, essentially a break-even situation.

Following a suggestion by the UK delegation, the Finance Committee developed a method for calculating dues based upon the principles used in 1981 and 1982 and designed to smooth out changes in dues. This matter will be considered separately by Council.

Investments

The market value of the IUPAC Reserve Fund remains well in excess of our target of two years expenditure. Despite this strong financial position, the Finance Committee is concerned about how we handle our investments in these turbulent economic



Dr. H. F. Wilson, Chairman, Finance Committee

conditions with changing currency rates. The Committee will develop a strategic plan for investments within the next year.

H. F. Wilson
Chairman, Finance Committee

50th Anniversary Meeting of the Israel Chemical Society

The anniversary will be celebrated at the Hebrew University of Jerusalem, 10–12 April 1984. The scientific programme will be focused on the achievements made in Israel in the general field of chemistry. Invitations to participate have been sent to the Presidents of Chemical Societies all over the

world and active participation by eminent scientists from international chemical communities is anticipated. Prof. H. C. Brown (USA), Prof. M. Eigen (FRG), Prof. J. M. Lehn (France), Prof. W. N. Lipscomb (USA), Dr. R. Pariser (USA) and Sir R. Richards (UK) are expected to be present.

DIVISION PRESIDENTS' BIENNIAL REPORTS TO THE COUNCIL

LYNGBY, AUGUST 1983

According to IUPAC Bylaw B4.109 a Division President must, at a General Assembly, present a report to the Council on the activities of the Division since the last General Assembly. Those presented at the Council meeting in Lyngby are reproduced, slightly edited, on the following pages. The title of the Union's journal, *Pure and Applied Chemistry*, has been abbreviated to PAC. Photographs of the Division Presidents appeared in *Chemistry International*, 1983, No. 1 where, on pages 14 to 26, the Division Presidents' reports on the first year of the biennium were published; those shown below were taken at the Council meeting.

I. PHYSICAL CHEMISTRY DIVISION

- 1.1. Commission on Physicochemical Symbols, Terminology and Units.
- 1.2. Commission on Thermodynamics.
- 1.3. Commission on Electrochemistry.
- 1.4. Commission on Physicochemical Measurements and Standards.
- 1.5. Commission on Molecular Structure and Spectroscopy.
- 1.6. Commission on Colloid and Surface Chemistry including Catalysis.

The report is divided into two parts. The first part consists of a listing of programmes that have been finished in the sense that documents have now been published or are in the process of being published. The listing is made under the headings of the Commissions or Subcommittees concerned and in some cases brief comments are made on the significance of the programme. Secondly, principal areas of progress in other programmes are likewise listed Commission by Commission.

References in the form (2/81), (3/83), etc. refer to projects listed in IUPAC Current Programmes 1983.

Recommendations published, or in the course of publication, since the 1981 General Assembly

Commission I.2

1. Assignment and Presentation of Uncertainties of the Numerical Results of Thermodynamic Measurements (*Provisional*), PAC, Vol. 53, pp. 1805–1825 (1981) — a good report on a timely subject.
2. Notation for States and Processes, Significance of the Word 'Standard' in Chemical Thermodynamics, and Remarks on



Prof. N. Sheppard, President, Division I

Commonly Tabulated Forms of Thermodynamic Functions, PAC, Vol. 54, pp. 1239–1250 (1982) — a rather fundamental report.

Commission I.3

3. Nomenclature for Transport Phenomena in Electrolytic Systems, PAC, Vol. 53, pp. 1827–1840 (1981).
4. Recommendations on Reporting Electrode Potentials in Nonaqueous Solvents (*Provisional*), PAC, Vol. 54, pp. 1527–1532 (1982), (7/81).
5. Interphases in Systems of Conducting Phases (*Provisional*), PAC, Vol. 55, pp. 1251–1268 (1983) — a nomenclature report (2/81).

6. Definition of pH Scales, Standard Reference Values, Measurement of pH and Related Terminology, PAC, Vol. 55, pp. 1467–1476 (1983) — these are important joint recommendations from Commissions I.3 and V.5.

Commission I.4

- 7–9. Recommended Reference Materials for Realization of Physicochemical Properties. Sections: Electrolytic Conductivity, PAC, Vol. 53, pp. 1841–1845 (1981); Permittivity, PAC, Vol. 53, pp. 1847–1862 (1981); Thermal Conductivity of Fluid Substances, PAC, Vol. 53, pp. 1863–1877 (1981), (4 and 5/81).
10. An Annotated Bibliography on Accuracy in Measurement, PAC, Vol. 55, pp. 907–930 (1983), (2/81) — a subject of growing importance.

Commission I.5

11. Presentation of Raman Spectra in Data Collections, PAC, Vol. 53, pp. 1879–1885 (1981).

Commission I.6

12. Reporting Experimental Pressure-Area Data with Film Balances (*Provisional*), PAC, Vol. 54, pp. 2189–2200 (1982), (7/81).
13. Reporting Physisorption Data for Gas/Solid Systems with Special Reference to the Determination of Surface Area and Porosity (*Provisional*), PAC, Vol. 54, pp. 2201–2218 (1982), (4/81) — a subject of considerable importance.
14. Definitions, Terminology and Symbols in Colloid and Surface Chemistry. Part 1.14: Light Scattering (*Provisional*), PAC, Vol. 55, pp. 931–941 (1983), (8/81).

Divisional Subcommittee on Plasma Chemistry

15. Thermodynamic and Transport Properties of Pure and Mixed Thermal Plasmas at Local Thermodynamic Equilibrium (LTE), PAC, Vol. 54, pp. 1221–1238 (1982).

IUB–IUPAB–IUPAC Commission on Biothermodynamics

16. Calorimetric Measurements on Cellular Systems: Recommendations for Measurements and Presentation of Results (*Provisional*), PAC, Vol. 54, pp. 671–679 (1982).

Continuing activities of Commissions and Subcommittees

Commission I.1

This Commission has the continuing and important task of checking all documents produced by the Physical Chemistry Division for consistency of terminology, symbols and units with other principal IUPAC documents.

Much work has been done in preparation for a new edition of the Green Book (3/81), i.e. the *Manual of Symbols and Terminology for Physicochemical Quantities and Units*, planned as a comprehensive revision probably incorporating a considerable number of appendices dealing with specific aspects of physical chemistry. All Commissions within the Divi-

sion will to some degree be involved in this project. Once the revised Manual has been agreed an *Abbreviated List of Symbols, Terminology and Units* (6/83) will also be produced in expectation of very wide dissemination. Both these projects will be considered in depth at Lyngby.

Commission I.2

The Commission has substantial interaction with I.1 over the Manual (5/83) and is participating in an important discussion with other Commissions on the choice of a standard state pressure. It is also engaged in detailed interaction with the Clinical Chemistry Commission VII.2 on activities and activity coefficients. It plays a substantial role in organizing a series of International Conferences on Chemical Thermodynamics, the last of which was held in London in September 1982.

At Lyngby the Subcommittee on Thermodynamic Tables is expected to agree a draft compilation of *Enthalpies of Vaporization and Cohesive Energies of Pure Organic Compounds* (4/81) and to complete Volumes 8 and 9, on *Chlorine* and *Fluorine*, respectively, of the *International Thermodynamic Tables of the Fluid State* (1 and 2/81). A draft document on *Transport Properties* (1/83) will also be presented at Lyngby.

Commission I.3

In addition to the four publications referred to earlier, the important book on *Oxidation–Reduction Potentials in Aqueous Solutions* (4/81) — a joint production of Commissions I.3 and V.5 — is being edited from a nearly complete set of typescripts. Major compilations of conductance data and kinetic data (5 and 6/81) are important ongoing activities. A considerable number of other projects listed in Current Programmes 1983 will be reviewed at Lyngby. Under (16/83) discussions on corrosion nomenclature are being actively pursued with ISO.

Commission I.4

In addition to the *Annotated Bibliography* (2/81) mentioned earlier a paper on *Precision and Accuracy* (9/83) is being discussed with BIPM, OIML and ISO and Commissions and Divisions within IUPAC. Updated and expanded versions of seven sections of *Recommendations on Reference Materials* have been completed as a contribution to the important compendium to be published in book form (8/83).

Commission I.5

A document on *Recommendations for the Calculation of Molecular Electrical Properties (Provisional)* will shortly be submitted for publication. Several others on *Definitions and Quantities in Optical Spectroscopy* (8/83, in collaboration with Commission VII.2), a *Glossary of Terms in Photochemistry* (Subcommittee on Infrared and Raman Spectroscopy in collaboration with Commission III.3, 6/83), and *Symbols, Terminology and Applications for Electron Spectroscopies* (1/81, in collaboration with I.6, IUCS and IUPAP) will be discussed in advanced draft forms at Lyngby. Substantial work has also been completed on documents concerned with *Mass Spectroscopy* (1/83) and *Conventions and Notations in Molecular Spectroscopy* (1/81), although addi-

tional meetings of the Subcommittees themselves may be needed after Lyngby before final versions of these documents are agreed.

Commission I.6

The three sets of provisional recommendations already published, and mentioned in the first half of this report, on *Solid-Gas Adsorption* (4/81), *Trough Experiments* (7/81) and *Light Scattering* (8/81) will have received comments from the community so that it is hoped that they can be finalized at Lyngby. A second draft of a document on *Adsorption from the Liquid Phase* (5/81) will be considered by the Commission, and it is hoped that this and a second draft on *Chemical Physics of Surfaces* (2/81) will be discussed in detail at Lyngby.

The important project on *Catalyst Characterization and Standardization* (9/83) — essentially a coordination project concerned with the work of several groups studying catalyst standardization and characterization — has made substantial progress following a meeting in London.

Divisional Subcommittee on Plasma Chemistry

Supplements to the Bibliography on Plasma Chemistry up to 1975 (5.1/83) and 1979 (5.2/83) have been published on a private basis, and copies are available at cost price from Prof. H. Suhr (Tübingen University, West Germany). It is expected that documents on *Thermal Treatment of Particles under Plasma Conditions* (1/81) and *Mass Spectrometric Diagnostics in Plasma Chemistry* (7/83) will shortly be submitted for publication by IUPAC.

The Subcommittee has met twice at other conferences and has put much effort into organizing the 5th and 6th International Symposia on Plasma Chemistry at Edinburgh (1981) and Montreal (1983), respectively. These conferences incorporate workshops (to encourage industrial participation particularly) and educational courses.

Interunion (IUB-IUPAB-IUPAC)

Commission on Biothermodynamics

Owing to the sad death of one member (Dr. G. T. Armstrong) and the resignation of the Chairman (Prof. Biltonen) because of pressure of work, this Commission has been less active during the past 2 years. However, two meetings, leading to the appointment of Prof. Wadsö as Chairman, have restored equilibrium, and it is hoped that progress will soon be resumed on some of the programmes listed in IUPAC Current Programmes 1983.

Contact with bodies outside IUPAC

Regular contact and discussions of the Division, particularly Commission I.2, with the European Federation of Chemical Engineers, has been arranged through the appointment of Dr. S. Angus of Imperial College, London, as informal IUPAC liaison officer. Various Commissions have commented on documents of mutual interest from IUPAC, OIML, CIPM and ISO. Contact with ISO will in the future be direct to the Division from various Technical Committees, particularly TC 12, of that organization.

Membership of Commissions, etc.

Since my last annual report I have to report, with great regret, the deaths of Prof. N. Ibl, past Chairman of Commission I.3 and a member of the Physical Chemistry Division Committee, of Mr. J. B. Armstrong of the Thermodynamic Tables Project Centre who contributed much to the IUPAC International Thermodynamic Tables set of volumes, and of Dr. G. T. Armstrong of Commission I.2. Each of these gentlemen had contributed much to IUPAC activities. Dr. G. T. Armstrong, under the aegis of Commission I.2, had been planning a book on *Critical Evaluation of Thermodynamic Data* together with Prof. E. F. Westrum, Jr. This project is at present in abeyance.

Since the Leuven General Assembly, Dr. G. A. Uriano has had to resign from his position of Vice-Chairman and Secretary of Commission I.4 because of pressure of work and we thank him for his past contributions to IUPAC. At Leuven the following members of IUPAC completed their periods as Titular or Associate Members, or as Subcommittee Chairmen within the Division, usually after a substantial number of years' excellent service to IUPAC: Dr. D. Ambrose, Prof. M. Laffitte, Dr. Y. Mashiko (Division Committee); Prof. A. T. Bell (Plasma Subcommittee); Dr. D. H. W. den Boer, Prof. V. Kellö, Prof. J. Koefoed, Dr. M. A. Paul (Commission I.1); Prof. H. Chihara, Dr. J. F. Counsell, Dr. V. A. Levitskii (Commission I.2); Prof. J. Kuta, Dr. R. Tamamushi (Commission I.3); Dr. S. Saeki, Dr. R. P. Graham, Dr. J. E. Lane, Dr. O. Suschny and Dr. W. Trabczynski (Commission I.4); Prof. P. Diehl, Dr. F. Dorr, Prof. S. Leach, Dr. P. M. Rentzepis (Commission I.5); and Prof. G. L. Haller (Commission I.6). Others, while giving up their particular roles at Leuven, continue to serve IUPAC in other capacities. IUPAC is exceedingly fortunate in the number and quality of people who serve on its various bodies and we offer all of them our grateful thanks for their contributions.

N. Sheppard

II. INORGANIC CHEMISTRY DIVISION

- II.1. Commission on Atomic Weights and Isotopic Abundances.
- II.2. Commission on Nomenclature of Inorganic Chemistry.
- II.3. Commission on High Temperature and Solid State Chemistry.

The Inorganic Division of IUPAC has had a very productive biennium. The Commissions of the Division have all been very active and each one has issued tangible products of their work during this period. The Executive Committee of the Division has met twice, once during the International Conference on Coordination Chemistry held in Hungary in July of

1982 and a second time at the beginning of the American Chemical Society meeting in Seattle in March of 1983. These meetings allowed the Executive Committee to review the work in progress by the Commissions and to plan the Division's activities for Lyngby. The health of the Division is good and its goals and objectives are being met. The work of the Division has been hampered by the reduced Titular Membership for Commissions and by a completely inadequate budget for the interim work of the Commissions. Many personal sacrifices have been made to accomplish the significant work which has been done. The detailed activities of the Commissions are outlined below.



Dr. Mary L. Good, President, Division II

Commission II.1

In the past year the Commission has been involved in the following activities:

The reports from the 1981 meeting in Leuven, Belgium have been completed and sent to IUPAC for publication in PAC. *Atomic Weights of the Elements* and *Isotopic Composition of the Elements* will appear as separate reports.

An interim meeting of the Subcommittee for the Assessment of Isotopic Composition (SAIC) was held at the Brookhaven National Laboratory in New York in August 1982. SAIC members are preparing an *Element by Element Review of all Changes to Atomic Weight Values*, which have been made since 1961. This Review is based on assessment of published physical and chemical data. A draft copy of the Review will be presented to the Commission during its meeting in Lyngby. The commission plans to finalize the report at that time.

A table of *Atomic Weight Values to Four Significant Figures* has been drafted and is being reviewed prior to submission to the Committee on Teaching of Chemistry (CTC) at a joint meeting in Lyngby. CTC requested this table at the Leuven General Assembly.

Commission members are preparing written reports on agenda items (e.g. *Evaluation of Isotopic Composition of Non-Terrestrial Materials*) for distribution prior to the Lyngby meeting. These reports will be the basis of discussion at the meeting.

Commission II.2

The efforts of the Commission on the Nomenclature of Inorganic Chemistry are focused on a complete revision of the rules of nomenclature published in 1970 in the Red Book. To have a set of rules as accessible as possible and involving as much pedagogy as possible, the new edition will be divided in two parts. Part I deals with the most common compounds and the basic aspects of nomenclature. Part II is concerned with more specialized topics.

Status of the Red Book — Part I: During these two years, eight drafts for eight chapters have been considered and discussed. Four have received the approval of the Commission, i.e. they are ready for publication subject to minor changes necessary for consistency with other chapters not yet fully completed.

Chapter I.1 Aims, functions, and methods of nomenclature.

Chapter I.2 Elements, atoms, and groups of atoms

Chapter I.4 Formulae.

Chapter I.8 Ions, radicals and salts.

Experts from other Commissions have been consulted to avoid inconsistencies or contradictions with rules prepared by other Commissions in fields closely related to inorganic chemistry.

Four additional chapters are well advanced and may be approved by the Commission during the Lyngby meeting. One chapter is to be devoted to solid state chemistry. At the Leuven meeting it was decided to set up a joint Working Party involving Commissions II.2 and II.3. This group has worked very hard and efficiently, meeting twice during the biennium. A final draft is near completion and will be presented at Lyngby to both Commissions. This work is very significant because of the lack of guidance and recommendations in this field during the rapid development of the past ten years. Contacts have been made with the International Union of Crystallography for the topics of common interest.

Status of the Red Book — Part II: Each chapter in this volume is concerned with a very specialized area. The basic rules of Part I will be brought to bear on a particular class of compounds with the needed extensions of those rules for the specialized field. The aim is to avoid an unstructured development of the basic rules by specialists working in the field (with no input from related fields) where inconsistencies and 'jargon' prevail.

The first chapter is entitled 'Nomenclature of isotopically modified compounds'. Prepared in close collaboration with Commission III.1 this chapter has been published as Recommendations in 1981. A joint Working Party with Commission IV.1 has prepared a large document on *Nomenclature for Regular Single-strand or Quasi Regular Single-strand Inorganic and Coordination Polymers*. This document was published as Provisional in November 1981, and represents

rules which were urgently needed due to the explosion of this field of chemistry in the last decade. The final version of the *Nomenclature of Hydrides of Nitrogen and Derived Cations, Anions, and Ligands* has been published in 1983. Finally, a document on polyoxoanions has been approved by the Commission and is presently under editorial process for publication in the near future.

Commission II.3

The Commission held a meeting at Karlsruhe, FRG, 1–2 October 1982, and the following projects have been pursued by members of the Commission:

Thermodynamic and Transport Properties of Alkali Metals (R. W. Ohse)

Bibliography of High Temperature Chemistry and Physics of Materials (M. G. Hocking)

IUPAC Thermochemical Data Bank (C. B. Alcock)

Reference Electrodes in Solid-State Electrochemistry at High Temperature (A. M. Anthony and J. Corish)

Melting Points of Refractory Oxides (J. Hlavac and J. P. Coutures)

Characterization and Terminology of Carbon (E. Fitzer)

Carbide-Carbon Secondary Temperature Standards (K. L. Komarek)

Properties of SiC and Si₃N₄ (G. Petzow and R. Sersale)

The last project has been retitled *Classification of Si₃N₄ and SiC Base Materials*. Three new projects have been initiated:

High Temperature Mass Spectrometry Ionization Cross Sections (J. Drowart)

Reference Electrodes for Solid State emf Studies (M. Rand)

Nomenclature of Solids (R. Metselaar and J. Corish)

The monumental *Handbook on Thermodynamic and Transport Properties of the Alkali Metals* of some 1400–1500 pages in two volumes will consist of 56 chapters. Manuscripts of 52 chapters have been received and final drafts are expected for the Lyngby meeting where the Commission will meet with representatives of Pergamon Press (R. W. Ohse). The subscription rate of the on-going *Bibliography of High Temperature Chemistry and Physics* with 165 subscribers has been raised to £8.50 to meet costs. References of the Bibliography will be incorporated in the *Bulletin of Chemical Thermodynamics* (Commission I.2.). Computer compatibility has been established and a successful trial run was conducted (M. G. Hocking). The manuscript of the report on *Reference Electrodes in Solid State Electrochemistry at High Temperatures* has been circulated and the final draft for publication in PAC is being prepared (A. M. Anthony and J. Corish). The report on *Melting Points of Refractory Oxides: Part I* has been published in PAC. Drafts on Part II have been circulated, commented on, and the final manuscript should be ready at Lyngby. Work on the melting points of HfO₂, CaO and Gd₂O₃ is in progress (J. Hlavac and J. P. Coutures).

The Subcommittee on Carbon and Graphite Characterization and Terminology has prepared a report on definitions of 30 terms. This report will be published in *Carbon* and, after receiving comments from the scientific community, a publication for PAC will be prepared (E. Fitzer). The Working Group on the Nomenclature of Non-Stoichiometric Compounds has held two meetings in Paris (June 1982 and April 1983). A draft has been prepared which will be discussed jointly with Commission II.2 at Lyngby (R. Metselaar and J. Corish). Thermodynamic data of more than 1000 inorganic compounds of the *IUPAC Thermochemical Data Bank* are available on magnetic tapes. The data for the elements will be prepared in the form of the JANAF tables for publication in the Bibliography (C. B. Alcock). High purity materials for carbide-carbon secondary temperature standards have been received and samples for characterization and measurement have been prepared (K. L. Komarek). The specification and properties of SiC and Si₃N₄ powders have been critically examined and will be reviewed in a publication in PAC. The classification of Si₃N₄ and SiC base materials will be treated by a Task Force (G. Petzow and R. Sersale). Preparations for the IUPAC-sponsored 4th International Conference on High Temperature and Energy-Related Materials to be held in Santa Fe, 2–6 April 1984, have commenced (G. Rosenblatt).

Mary L. Good

Nomenclature and technical reports of the Inorganic Chemistry Division

Nomenclature of Inorganic Chemistry: II.1 — Isotopically Modified Compounds, PAC, Vol. 53, pp. 1887–1900 (1981) — Commission II.2.

Nomenclature for Regular Single-Strand and Quasi Single-Strand Inorganic and Coordination Polymers (*Provisional*), PAC, Vol. 53, pp. 2283–2302 (1981) — Commissions II.2 and IV.1.

Nomenclature of Inorganic Chemistry: II.2 — The Nomenclature of Hydrides of Nitrogen and Derived Cations, Anions and Ligands, PAC, Vol. 54, pp. 2545–2552 (1982) — Commission II.2.

Melting Temperatures of Refractory Oxides: Part 1, PAC, Vol. 54, pp. 681–688 (1982) — Commission II.3.

Atomic Weights of the Elements 1981, PAC, Vol. 55, pp. 1101–1118 (1983) — Commission II.1.

Isotopic Compositions of the Elements 1981, PAC, Vol. 55, pp. 1119–1136 (1983) — Commission II.1.

Lectures from Inorganic Chemistry Division sponsored Conferences and Symposia

Tenth International Conference on Organometallic Chemistry, PAC, January, 1982.

International Conference on the Chemistry of

Materials at High Temperature, PAC, July 1982.
Sixth International Symposium on Solute-Solute-Solvent Interactions, PAC, August 1982.
Eight International Conference on Non-Aqueous Solutions, PAC, December 1982.
XXII International Conference on Coordination Chemistry, PAC, January 1983.
First International Conference on Bioinorganic Chemistry, PAC, July 1983.

III. ORGANIC CHEMISTRY DIVISION

- III.1. Commission on Nomenclature of Organic Chemistry.
- III.2. Commission on Physical Organic Chemistry.
- III.3. Commission on Photochemistry.
- III.4. Commission on Medicinal Chemistry (Suspended 1981).

1. Organization of the Division

We have proposed a new set of *Division Rules*, dealing with:

Membership in the Division in order to have a good overview of the field of organic chemistry, good geographical representation and good staggering of membership;

Membership of Commissions in order to have the best international experts;

Organization of symposia promoted by the Division: Chemistry of Natural Products, Physical Organic Chemistry, Organic Synthesis, Organometallic Chemistry directed toward Organic Synthesis.

In order to have a better *identification of working parties* (who is doing what?), we have asked Commission Chairmen to give a matrix of their groups (members versus projects). In order to *save IUPAC money* we have compressed into one day the Division Committee meeting in Lyngby. In order to be *more efficient* we have asked the Chairman and Secretary of each Commission to be present up to the last day of the Division Committee meetings. We have also asked Commission III.1 (Nomenclature) not to have, as in the past, a separate meeting, but to be present in Lyngby in order to interact with other Commissions dealing with nomenclature in other fields.

2. Commission activities

Commission III.1

This Commission is quite large (25 members) and very active (20 projects). The work follows two main lines — one is updating the compendium of rules of nomenclature, popularly called the Blue Book, so useful for all organic chemists; the other is to devise a new system of nomenclature for new fields of organic chemistry.

The Commission has published two sets of recommendations during the past biennium — a document on nomenclature of heterocycles (Hantzsch-Widman

system) and two provisional documents (tetrapyrroles, and non-classical bonded compounds). It is planning to complete 8 projects in 1984 (which is perhaps optimistic).

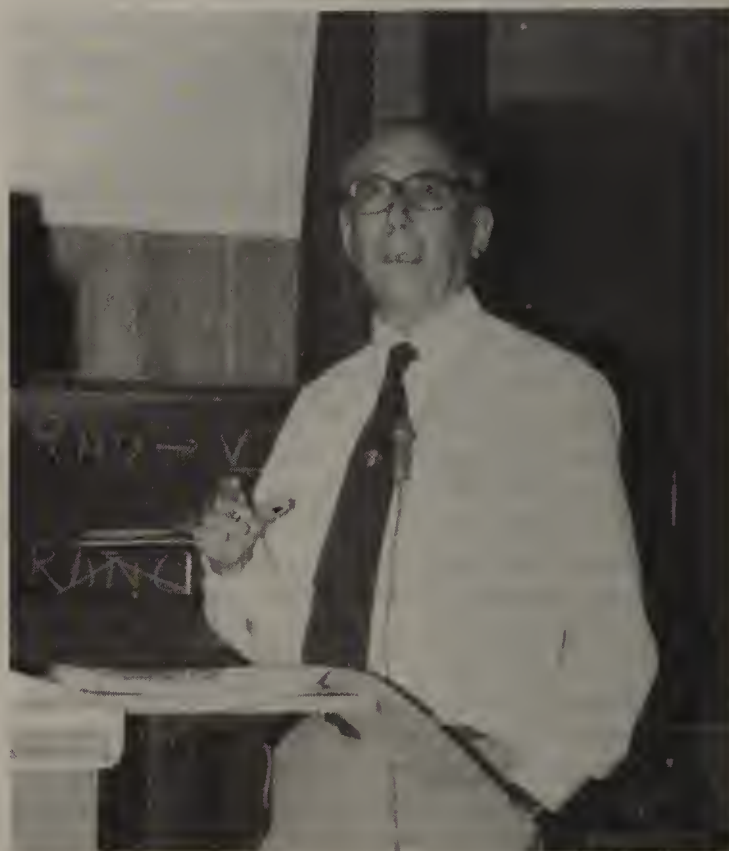
The activities of Commission III.1 are excellent; the only point on which we have to be careful is not to agree to initiate new projects as long as the same number of existing ones have yet to be terminated. The Commission had a meeting in 1982 at Heidelberg and the full minutes have been received.

Commission III.2

The Commission has 21 members and 11 projects. It has chosen an innovative and difficult task: to devise rules for nomenclature of organic reactions. The difficulty of the task may be appreciated when one looks at the number of successive drafts already prepared for some projects. The work done by this Commission will be useful for communication among organic chemists who have been compelled up to now to use the names of the discoverers for designation of reactions (Grignard reaction).

One important document has been published in final form: glossary of terms used in physical organic chemistry. One provisional document was issued (straight-forward transformation).

This Commission has good interaction with other Commissions. In 1982 it met in Louvain la Neuve and the minutes have been received.



Prof. J. Mathieu, President, Division III

Commission III.3

This Commission has 17 members and 5 projects. The work has little orientation towards nomenclature and standardization, although the project on a glossary of terms used in photochemistry is useful. The report on recommended standards for reporting photochemical data should soon be submitted to experts in the field for comment.

The activity of this Commission is at a lower level than for Commissions III.1 and III.2.

Commission III.4

This Commission had 11 members when it was suspended for lack of 'IUPAC-minded' projects (see section 5).

3. Symposia

Symposia held in 1982

From the report forms initiated in the Organic Division, it is easy to have a good overview of the quality of the various meetings:

Physical Organic Chemistry (Louvain la Neuve) was a good meeting with 254 participants, 90% from abroad.

Chemistry of Natural Products (Pretoria) with 338 participants, 50% from abroad.

Organic Synthesis (Tokyo) was a good meeting; however, too big for our standards with 1450 participants, 20% from abroad.

Carbohydrates (Vancouver) was an excellent meeting, with 430 participants, 80% from abroad.

Theoretical Chemistry (Dubrovnik) was a small, but good meeting, with 132 participants, 60% from abroad.

Marine Natural Products (Tenerife) was a poor meeting: 115 participants, 70% from abroad. It was decided in the Division not to hold such a meeting every two years in future but every four years.

Sponsorship

The President of the Division has refused to support 3 symposia — one for scientific reasons, one for subject duplication, and one for geographical restriction.

Planning of future Symposia

For symposia promoted by the Division we like to have reasonable long-range planning; but without making commitments too early.

Chemistry of Natural Products

- 1980 Tenerife (Spain)
- 1982 Pretoria (South Africa)
- 1984 Poznan (Poland)
- 1986 The Hague (Netherlands)
- 1988 Kyoto (Japan)?

Physical Organic Chemistry

- 1980 Santa Cruz (USA)
- 1982 Louvain la Neuve (Belgium)
- 1984 Auckland (New Zealand)
- 1986 Tokyo (Japan)
- 1988 Regensburg (FRG)?

Organic Synthesis

- 1980 Madison (USA)
- 1982 Tokyo (Japan)
- 1984 Freiburg (FRG)
- 1986 Moscow (USSR)
- 1988 (USA)?
- 1990 Helsinki (Finland)

Organometallic Chemistry directed towards Synthesis

- 1981 Fort Collins (USA)
- 1983 Dijon (France)
- 1985 Kyoto (Japan)
- 1987 Berkeley (USA)
- 1989 (UK)?

Other Symposia

Medicinal Chemistry 1984, Uppsala (Sweden)

Photochemistry 1989, Interlaken (Switzerland)

Marine Natural Products 1985, France?

Novel Aromatic Compounds 1985, St. Andrews (UK)

Carbohydrates 1984, Utrecht (Netherlands)

Carotenoids 1984, Munich (FRG)

4. New fields of activity

Bioorganic chemistry

In our Division we have the feeling that the growth point of biochemistry is reaching the molecular level for interpenetration of its modes of action and more and more organic chemists should be drawn towards this new field, the background of which will be useful to them.

We have decided to suggest initiating not a new Commission, but only a new symposium series. Prof. Breslov accepted to organize the first meeting in 1985 at New York.

Computers and chemistry

The use of computers is becoming more and more important in organic chemistry for: documentation, storage of physical data; drug design, correlation of structure-activity; stereochemistry, conformational analysis; design of organic synthesis; topology pattern recognition; structure determination; monitoring of reactions; teaching in chemistry.

Within the EUCHEM framework several conferences have already been held in this field. We have the feeling that IUPAC should be more involved than at present and an interdivisional committee is recommended for sharing the work among the various Divisions.

Organic chemistry of technological processes

We tried without much success to promote interest in this field where good organic chemistry could help industry. Our Division will contact COCI in order to try to initiate joint action.

Commission on chemical kinetics

Our Division is favourable to the proposal of the Physical Chemistry Division for a new Commission supported by several Divisions.

Involvement of China

China has, up to now, not been actively involved in our Division. In 1981 we invited Prof. Huang to be a member of the Division. In 1982 we asked Prof. Wang Yu (Shanghai) to promote in China for 1985 a small IUPAC conference on chemistry of natural products of medicinal value.

5. Medicinal Chemistry Commission

Background

It is important to know the history of the Commission within IUPAC in order to understand their feeling of frustration:

1969 — Creation of a *Section* on Medicinal Chemistry with a programme accepted by IUPAC;

1975 — Relegation of this Section to a *Commission* Status;

1976 — Proposition from IUPAC President Cairns to involve the Commission in a new Division on Health and Environment.

1979 — Creation of a *Division* of Clinical Chemistry.

All of these facts made the relationship between the Organic Chemistry Division President and the Commission not as good as they should be.

Biennium 1981–1983

July 1981. The critical assessment made by Prof. H. Zollinger on the activities of Commission III.4 was quite severe.

August 1981 (General Assembly, Leuven). The Officers of the Organic Chemistry Division, in full agreement with Prof. Zollinger, invited the Officers of the Commission to come to Leuven in order to explain what IUPAC was expecting in the way of activities; the Council suspended the Commission and asked for a Study Group to reorient their activities.

November 1981. The Study Group met in Paris and agreed that publication of newsletters and promotion of symposia were good, but 'IUPAC-minded' projects on standardization, nomenclature and normalization were very important in the field and had to be launched.

March 1982. As no answer came from the Commission Officers to the report of the Study Group, the Division President asked the Commission Secretary (Dr. H. Timmerman) to come to Paris. Dr. Timmerman said that the Commission was following the programme agreed in 1969 and would not change; he did not acknowledge that the Commission activities were more European than international.

June 1982. In a private meeting in Toronto most of the Commission members agreed to vacate their seats and afterwards confirmed their resignation.

September 1982. In Prague the Bureau decided to suspend the entire membership of the Commission, to discontinue the Study Group, and to ask the President of the Division for new proposals.

November 1982. The Division President sent a questionnaire to 50 leading scientists in the field from universities and industry.

January 1983. The Division President received 35 positive answers of possible IUPAC-minded projects.

February 1983. The former Officers of the Commission (Prof. W. Nauta and Dr. H. Timmerman) announced in a newsletter the creation of an International Organization on Medicinal Chemistry.

June 1983. The Division President proposed to the Vice-President of the Union the appointment of a new Study Group (Dr. Bartmann, Dr. A. Brossi, Prof. S. Sarel and Prof. C. G. Wermuth). Profs Sarel and Wermuth were members of the old Commission and Drs Bartmann and Brossi have a long industrial experience in the field.

August 1983. Prof. Wermuth will present to the Bureau the information he got from his colleagues.

Future of medicinal chemistry within IUPAC

Objective. It is important to promote standardization in the field of medicinal chemistry for better understanding among scientists (e.g. a list of recommended reference compounds will be welcome). Also

it is important to have a group working at the international level and not promoting only symposia in Western Europe.

Structure. Several possible structures might be taken into consideration:

- (a) restoration of the Commission within the Organic Chemistry Division, but with a new membership and new guidelines for IUPAC-minded projects;
- (b) creation of a Health Chemistry Division by fusion of the Clinical Chemistry Division and Medicinal Chemistry Commission;
- (c) creation of a joint Commission with membership from IUPAC and IUPHAR.

In all cases the new Study Group has to look for information from several organizations, such as COCI and the Clinical Chemistry Division.

Contact should also be undertaken with international organizations, such as IUPHAR, IUB, and the International Organization on Medicinal Chemistry, in order to achieve good coordination for the future.

J. Mathieu

IV. MACROMOLECULAR DIVISION

IV.1. Commission on Macromolecular Nomenclature.

IV.2. Commission on Polymer Characterization and Properties.

General

The following symposia have been held or are planned to take place before the end of July 1983.

1982

12–16 July: 28th International Symposium on Macromolecules, Amherst, U.S.A.

19–22 July: 23rd Prague Microsymposium on Selective Polymer Sorbents, Prague, Czechoslovakia

29 August–2 September: International Symposium on Interrelations between Processing, Structure and Properties of Polymeric Materials, Athens, Greece.

1983

11–14 July: 24th Prague Microsymposium on Copolymers, Structure and Solution Properties, Prague, Czechoslovakia.

18–21 July: 25th Prague Microsymposium on Processing and Long-Term Stabilities of Hydrocarbon Polymers, Prague, Czechoslovakia.

Before the end of 1983, two further symposia will be held: 30 August–2 September, 6th International Symposium on Cationic Polymerization, Ghent, Belgium, and 5–9 September, 29th International

Symposium on Macromolecules, Bucharest, Romania. The latter is a multi-topic meeting and about 800 participants are expected.

An informal meeting of the Division Committee was held in Amherst, 16 July 1982. Members stood briefly to pay their respects to Dr. Maurice L. Huggins, who died early in 1982. Minutes of the meeting have been circulated to the Division. Profs. A. Bantjes (the Netherlands), G. Reinisch (Democratic Republic of Germany) and M. Lewin (Israel) were approved as National Representatives.



Prof. C. H. Bamford, President, Division IV

An ample discussion on the frequency of IUPAC-sponsored symposia in macromolecular science revealed a consensus for the view that large, multi-topic symposia should be held only once every two years, in agreement with the recommendations formulated (but subsequently largely disregarded) at the Division Committee meeting in Munich, 22–25 August 1973. The President and Secretary were asked to prepare new formal guidelines covering the frequency and organization of IUPAC-sponsored symposia (both multi- and single-topic) for presentation at Lyngby. The current situation of symposia for which IUPAC sponsorship had been obtained and new proposals for sponsorship were discussed.

The activities of Commissions IV.1 and IV.2 were reported to the Committee. In view of the continued difficulty experienced in establishing an East European subgroup of IV.2, Dr. P. Kratochvil suggested that discussions on this matter should be held during the 1983 Prague Microsymposia. This proposal was accepted (see below).

An important US report (1981) from The National Research Council (ad hoc Panel on Polymer Science and Engineering, Committee on Chemical Sciences, headed by Prof. Overberger) on *Polymer Science and Engineering: Challenges, Needs and Opportunities*,

which had been seen by only a few members of the Divisional Committee, was considered to contain many features of interest to the Division, including a section on Education in Polymer Chemistry. The report has subsequently been distributed to interested members by Dr. N. M. Bikales, and will be considered in more detail at Lyngby. Dr. N. M. Bikales attended a CHEMRAWN Committee meeting in Washington as an observer and reported on its deliberations. In view of the importance of CHEMRAWN activities the Committee felt that similar representation at future meetings is desirable.

The following publications from symposia have appeared during the period under review.

In PAC:

International Symposium on Advances in Polymer Characterization (Invited lectures, Durham, U.K., 13–17 July 1981).

Characterization of Structure and Dynamics of Macromolecular Systems by NMR Methods (Main lectures, 22nd Prague Microsymposium on Macromolecules, 20–23 July 1981).

Selective Polymeric Sorbents (Main lectures, 23rd Prague Microsymposium on Macromolecules, 19–22 July 1982).

International Symposium on Interrelations between Processing, Structure and Properties of Polymeric Materials (Invited and selected contributed lectures, Athens, Greece, 29 August–2 September 1982).

As a book (Pergamon):

Macromolecules (Main lectures presented at the 27th International Symposium on Macromolecules, Strasbourg, France, 6–9 July 1981).

Commission IV.1

The Commission met for four days in Amherst, Massachusetts, U.S.A., 17–20 July 1982, inclusive, immediately following the IUPAC 28th Macromolecular Symposium. In addition, on 15 July the Commission held a joint meeting with the Nomenclature Committee of the Polymer Division of the American Chemical Society, at which a useful discussion took place of the current activities of both bodies and of ways in which a measure of collaboration could be developed to ensure good liaison in the future. At the Amherst meeting most of the Commission's time was taken up with preparation of the final draft of the recommendations for nomenclature for copolymers. This proved to be an unexpectedly complex task but was nevertheless brought to a satisfactory conclusion, except for one difficult passage which has since been resolved by correspondence. The final version should be published in 1983.

A document presenting a Classification System for Single-Strand Polymers was discussed at Amherst and has since been completed by a Working Party of the Commission: it will be approved by the Commission at the Lyngby meeting and forwarded for publication. Since the Leuven General Assembly, Working Parties of the Commission have been active in correspondence leading to drafts of papers recommending definitions of physical terms relating to polymers with particular reference to the crystalline state, dilute solutions and concentrated solutions and

rheology. This topic will be the main agenda item for the Lyngby meeting.

Other activities include work on documents dealing with subsidiary definitions of terms relating to polymers, nomenclature for networks and blends, for ladder polymers, and for macrocycles. Documents from external bodies, including ISO, have been circulated to members for comment, where appropriate. One member of the Commission, Prof. Pierre Sigwalt, has contributed to the compilation of a Glossary of Stereochemical Technology organized by Prof. Victor Gold. During the last year thought has been given to publishing the recommendations of the Commission in the form of a compendium of Polymer Nomenclature, and plans for doing this are developing. The following publication has appeared:

Nomenclature for Regular Single-Strand and Quasi Single-Strand Inorganic and Coordination Polymers (*Provisional*) PAC, Vol. 53, pp. 2283–2302 (1981).

Commission IV.2

At the 1981 General Assembly Dr. P. L. Clegg was appointed Chairman of the Commission in succession to Dr. J. W. Barrett. Subsequently, it was agreed that Dr. H. H. Meyer (Hüls) should be elected Chairman of Working Party IV.2.1 (Structure and Properties of Commercial Polymers), a position formerly held by Dr. Clegg. Formal handover took place at the first available meeting of the whole Working Party early in September 1982.

The Commission held a meeting in Berlin at the Bundesanstalt für Materialprüfung on 16–17 September 1982. A representative of ISO TC61 was invited to attend, but the invitation was declined with regret. The Commission unanimously agreed that the Division be asked to appoint Dr. Meyer a Titular Member. Following the decision at the last Commission meeting, members brought forward a number of suggestions for new fields of work. The following polymer areas were considered worthy of further consideration and will be discussed at Lyngby: Biopolymers, Photochemical Properties, Electrical Properties, Ageing/Degradation, Tribology, Optical Properties, Liquid Crystalline Polymers, Composites (+ fillers), Thermodynamic Parameters, Film Properties, Transport Properties.

It was noted with regret that Dr. Scholte wished to resign from the Chairmanship of Working Party IV.2.2 as soon as he had arranged a suitable successor and that this would therefore probably be his last Commission Meeting. The meeting thanked him warmly for his most able work over eleven years. Recently, Mr. Paul Starck of Neste Oy (Kulloo, Finland) has agreed to take over the Chairmanship. It was agreed to invite Dr. Burt Anderson (DuPont) and Prof. James Seferis (Washington University) to become new Associate Members of the Commission and to make it clear that they would be welcome at the next meeting as observers, prior to their formal appointment.

Working Party IV.2.1 (WP1) held a joint meeting of its rheological and mechanical 'halves' during the IUPAC-sponsored Athens symposium in 1982, which was so successful that a similar meeting has

been arranged for October 1983, in Ludwigshafen. Five papers from WP1 have been published in PAC:

Structure and Properties of Uni- and Biaxially Oriented Polypropylene Films: Part 2 — Mechanical and Other End-use Properties. A. J. de Vries, PAC, Vol. 54, pp. 647–670 (1982). Constitutive Equations from Gaussian Molecular Network Theories in Polymer Rheology. A. S. Lodge, R. C. Armstrong, M. H. Wagner and H. H. Winter, PAC, Vol. 54, pp. 1349–1359 (1982).

*Influence of Acrylic Processing Aids on the Rheology and Structure of Polyvinyl Chloride. F. N. Cogswell, PAC, Vol. 55, pp. 177–190 (1983).

*Collaborative Research on Polymeric Materials through IUPAC. P. L. Clegg, PAC, Vol. 55, pp. 755–764 (1983).

A Collaborative Study of the Relation between Film Blowing Performance and Rheological Properties of two Low Density and two High Density Samples. H. H. Winter, PAC, Vol. 55, pp. 943–976 (1983).

The WP1 subgroup on Characterization and Estimation of Defects in the Molecular Structure of Poly(vinyl chloride) has completed its series of meetings. It is intended to submit two reports for publication during 1983.

The recently-formed Japanese subgroup of WP1 has achieved a high level of activity having been helped by two annual subventions of \$500 from Commission funds. Members have considered a number of different topics and are currently working on two of these: Rheological Properties of Model Materials for High-Impact Polystyrene at Elevated Temperatures, and Relationships between Molecular Characteristics and Mechanical Properties of Linear Low Density Polyethylene. Papers on Characterization of High-Impact Polystyrene and other Similar Materials and Viscoelastic Properties of Rubber-Modified Polymeric Materials at Elevated Temperatures are being prepared for PAC. Difficulties in finding a convenor have delayed the establishment of an Eastern European subgroup of WP1, the person originally chosen being no longer available. A meeting between potential members of the subgroup being arranged by Dr. J. Stejskal of the Czech Institute of Macromolecular Chemistry will now be held on 15 July in Prague (following the 24th Microsymposium). It is hoped that the Chairmen both of the Commission and of the Working Party will also attend.

Working Party IV.2.2. (WP2) on Molecular Characterization of Commercial Polymers has held two meetings (April 1982 and 1983) and now has an active membership of 15, a slight decline.

The programme on molecular characterization of two ethylene-propylene block copolymers, headed by Dr. Simonazzi (Montepolimeri), has been completed and an internal report presented to the Work-

*These reports were also presented at the IUPAC-sponsored symposium at Athens in August/September 1982.

ing Party. The Commission expressed a keenness to see this published and the Secretary was asked to write to encourage him in this endeavour. Present programmes are largely centred around linear low density polyethylenes. As well as the usual molecular weight characterization, ^{13}C NMR and DSC are being employed. Other interest lies in PVC, polystyrene, polyamides and polyesters. A decision on the future of this subgroup will be made at Lyngby.

The subgroup on Characterization of Polyelectrolytes involves 14 laboratories, both academic and industrial. Samples of a synthetic polyelectrolyte from a single batch [sodium poly(styrene sulphonate), from Pressure Chemicals] have been distributed and work on characterization has started. A major objective is the comparison of different experimental techniques of characterization.

Difficulties have been experienced in setting up the subgroup of WP2 on Rubber Characterization which remains leaderless, although there has been interest from 8 laboratories.

Working Party IV.2.3 on Supported Polymer Films has held three meetings (two major ones) and reports a slightly increased membership. Two reports are currently being drafted and progress is being maintained on the three existing projects on *Adhesion*, *Analysis of Emulsion Paints* and *Stability of Systems containing Amino Resins*. A new project will start this year on *Characterization of Cure Coatings in Relation to Performance Properties*. A number of other new projects are being actively considered.

Professor Dulog, the Working Party Chairman, has agreed to support the formation of a subgroup to develop the project on *Surface Properties of Films and Fibres* which should have been initiated by Working Party IV.2.6. In consequence, the latter Working Party has been disbanded and Prof. D. T. Clark has resigned from the Commission.

Working Party IV.2.4 on Thermal Properties of Polymers held a meeting at Amherst last year and plans another. The Working Party, which now has 27 members and a considerable global spread, has been set up to study relationships between thermal properties of polymers and molecular and physical properties. The present initial work is concerned with four different commercial polystyrenes: two from Dow and two from BASF. The more difficult case of crystalline polymers — particularly polypropylene — is being considered. Contacts have been made with ICTA, NATAS and the relevant ASTM Committees. The Commission, after some discussion of possible overlap with these organizations, reaffirmed the difference between their interests and the interests of the present Working Party.

Working Party IV.2.5 on Kinetic Parameters in Free Radical Polymerization held a successful meeting last year with all participating members present. Membership has fluctuated around 16 and is only just sufficient to maintain the required programme.

Current programmes involve the free-radical polymerizations of styrene and methyl methacrylate at a number of designated temperatures. To date, seven sets of kinetic data have been submitted. Problems encountered have arisen primarily from im-

perfect removal of stabilizer from monomer and also in analysing molecular weights and distributions accurately by GPC, particularly at high molecular weights.

C. H. Bamford

V. ANALYTICAL CHEMISTRY DIVISION

- V.1. Commission on Analytical Reactions and Reagents.
- V.2. Commission on Microchemical Techniques and Trace Analysis.
- V.3. Commission on Analytical Nomenclature.
- V.4. Commission on Spectrochemical and other Optical Procedures for Analysis.
- V.5. Commission on Electroanalytical Chemistry.
- V.6. Commission on Equilibrium Data.
- V.7. Commission on Analytical Radiochemistry and Nuclear Materials.
- V.8. Commission on Solubility Data.

Since the 31st General Assembly in Leuven in 1981, the Analytical Chemistry Division has been quite active; the reduction of the number of members of the Commissions and the restricted funds have caused the Commissions to reorganize their projects and their programmes. A report on the activities of the Division which was given during the meeting of the Bureau in September 1982 at Prague was published in *Chemistry International*, 1983, No. 1 and emphasized the main lines of activity of the Commissions and the inter-Commission projects coordinated by the Division: nomenclature in analytical chemistry, data and constant assembly, collaboration between the Analytical Chemistry Division and the other Union Divisions and in conjunction with different International Organizations were among the subjects discussed in the report. Activity in these fields was implemented by the publication of the work in analytical chemistry listed in the Appendix. In this report, the present status of work and publications, as well as the organizational problems of the Commissions and the future developments which will be discussed in meetings at the 32nd General Assembly in Lyngby, are described.

1. Nomenclature in Analytical Chemistry

1.1 Without repeating what has been said about the developments presented at Prague and the importance of this activity in IUPAC, it should be noted that four reports on nomenclature in analytical chemistry issued by Commissions V.3, V.4 and V. 7 have been published. Examination of the current programmes and the reports of activities of the Chairmen of the Nomenclature Commission and other Commissions of the Division indicates that more reports will be ready for publication after

Lyngby. It will also be noted that various work listed among the technical reports likewise presents an aspect of nomenclature at the same time as the definition of technical terms.



Prof. F. Pellerin, President, Division V

1.2. Compendium on Analytical Nomenclature

The preparation of a second edition of the Compendium (Orange Book) is progressing on schedule. Two points will have to be discussed in Lyngby; the first concerns the administrative and financial aspects, which involved the opinion of the IUPAC authorities, and a discussion with the editor.

On the other hand a draft will be ready for review at the General Assembly and the major plan is to incorporate into the Orange Book the additional reports on nomenclature which have appeared since the publishing of the first edition. The exchanges of views which have taken place by correspondence between the coordinator, the members of the Compendium work group and the President and Executive Committee of the Division tend to seek the most economical solution while avoiding conflicting styles. Once more, I must remind you that a great many analytical chemists are awaiting the development of the Orange Book involving the publication of new chapters on nomenclature and the revision of the subjects handled, according to remarks received both from Members of the Division and from individuals or organizations outside IUPAC. The problem will be studied by the coordinator and the Division Committee.

1.3 Multilingual dictionary of analytical chemistry

The difficulties encountered and the delay accumulated in launching this project were described to the IUPAC Bureau in Prague, September 1982, and resulted in the resumption of this study under easier terms and acceptable financial conditions. It is

proposed that the Division and its Commissions should gradually work on the dictionary by proposing a certain number of terms each year until a total of 2000 words is reached, constituting a virtually complete list of those which are most used in analytical chemistry. The current Compendium on Analytical Nomenclature will serve as the basis for this choice.

Definitions will be made in English only in this first edition with word lists in French, German, Russian, Japanese, Spanish, Chinese and Portuguese. Subsequently NAOs would have the right to produce editions in French or German, for example, with word lists in the other languages. This solution will be proposed to the Division Committee. Other solutions can be recommended: under any circumstances, the Division of Analytical Chemistry and its Commissions possess, in their own work and publications, sufficient material to prepare the dictionary and accomplish an initial publication in a short period of time.

2. Trace elements of metal in natural waters

This project involves the participation of all the Commissions of the Division and proposes to offer the analytical chemist a survey of available methods, showing their respective performances, their area of application and, in general, all information that will enable them to transpose the data to the solution of specific problems. In the field of the detection and determination of metallic traces in natural waters, the work to be covered was enormous and it was necessary to organize methods of work.

The intention is to publish, under the auspices of the Analytical Chemistry Division and after the necessary editorial work, the material in a book entitled *Analytical Procedures Recommended by IUPAC for the Determination of Trace Elements in Natural Waters*. The idea is that in this manner, based on the expertise of the members of the Division, a collection of approved analytical procedures is made available to the user. According to the information the Division President and other members of the Division Committee have had since Leuven, there are great expectations from this Division project among a large variety of potential users for reliable guidelines for the sound analysis of trace elements in natural waters, e.g. analysts, hydrologists, oceanographers, toxicologists, ecologists, limnologists, etc., involved in aquatic research or charged with tasks concerning protection and surveillance of the aquatic environment or working on the wet deposit of trace elements from the atmosphere by rain and snow.

Professor Nürnberg, coordinator of the project, is collecting the contributions from the Commissions and preparing them for submission at the General Assembly at Lyngby. Obviously the various analytical procedures have to be presented in a common order and manner. To facilitate this task Prof. Nürnberg prepared a scheme for presentation of summaries of the essentials to be treated. An initial publication will enable IUPAC to consolidate the place it has assumed in this field and to fulfil the expectations of a great many analytical chemists

specializing in this area. The regular publications will be brought together in the book, whose proposed title has been indicated above.

3. New Commission V.7: Commission on Radiochemistry and Nuclear Techniques

The activity of Commission V.7 on Analytical Radiochemistry and Nuclear Materials was suspended in Leuven and a working group was set up (Prof. Grasserbauer, Chairman, Dr. Roth, Prof. Steinnes and Dr. de Bruin) under the conditions established by the Bureau. The report on the first meeting was examined by the Bureau in Prague (see the Report of the President of the Division). At the conclusion of its second meeting (Paris, December 1982), the working group suggested the name of a new commission: Commission on Radiochemistry and Nuclear Techniques, and identified a number of projects for an initial work program. The report of the working group was examined by the Executive Committee, which recommended that the Analytical Division be designated as 'lead' Division for a new interdivisional Commission, that the Division Committee hold consultations with other interested Divisions and, in concert with these Divisions, appoint a representative task group to draw a detailed proposal for the new Commission.

4. Numeric data bases

At the Bureau meeting in Prague, a Subcommittee on numeric data bases was set up. The Division of Analytical Chemistry is particularly interested in the creation and development of this Subcommittee, and especially the Commissions on Equilibrium Data (V.6) and Solubility Data (V.8). Data storage and computerization is now a top priority for analytical chemists. An enormous amount of work on the development of a numeric data base on stability constants has been accomplished by Commission V.6 in collaboration with the Swedish Research Council. The Analytical Chemistry Commissions are accumulating a considerable amount of data and the example of Commission V.6 could serve as a point of departure or model for the Subcommittee, as Vice-President Schneider has suggested. The Chairmen of Commissions V.6 and V.8, Profs. Ahrland and Kertes, have been invited by the Vice-President to attend the Subcommittee meetings at Cologne and at Lyngby.

In very general terms, the problems of computerization of data raise new problems in analytical chemistry; all the Commissions are interested in one way or another in the development of data processing, by microprocessors, etc., in analytical techniques and equipment. The various Commissions of the Division ought to reflect upon the participation and service that they are able to furnish. It would appear that the study of these problems should be scheduled among the future plans of each Commission.

5. Summary of the activities of the Commissions

The activities of the different Commissions were examined by Vice-President Schneider in the Critical Assessment of the Programs and Projects. The various projects now under way are listed in the current programme; in addition, the list of publications issued by the Commissions of the Division are shown in an Appendix to this report. The Division as a whole has published in PAC four reports on nomenclature in analytical chemistry and 21 technical reports resulting from the work of its Commissions. A summary of the activity is given below, including in certain cases the prospects for new work.

5.1 Commission V.1

The fields of activity and work program of Commission V.1 correspond fully to the fundamental tasks of the Commission, i.e. to clear up terms, standardize ways of analysis, treatments of reagents, give guidelines for selection of best suited methods, etc., and respond to the demands of modern scientific techniques. In this respect the work of the Commission has an international significance and an objective, unbiased scientific level.

Four reports have been approved by the Division Committee and will be ready for publication in 1983, which increases the number of reports already published or about to appear to a total of nine; three projects will be studied in Lyngby and given final form in 1985. The Commission plans to present new projects: a study of various organic reagents, and the distinction of stationary phases in GLC and HPLC chromatography. It will take an active part in the Division's project on *Trace Elements of Metal in Water*.

5.2 Commission V.2

The Commission's activities have included organization of Symposia or participation in them, and microanalysis Workshops (e.g. Sarrebruck 1982); the Commission also had a meeting in Dortmund in 1982. The Commission is continuing its work in a highly efficient manner. It is working in collaboration with the other Commissions and Divisions, and is examining in a very vigilant fashion the work of the other IUPAC Commissions in order to offer its experience and participation in work connected with its programmes or having possible recourse to microchemical analysis.

During the period 1981–1983, Commission V.2 published two reports, has submitted five further reports to the Division and a further report is ready for submission after retyping. These reports bring to completion the series *General Aspects of Trace (Inorganic) Analysis*, but two further projects have evolved therefrom — *Critical Evaluation of Analytical Methods for the Determination of Trace Elements in Various Matrices* and *Methodology of Trace Organic Analysis*. The latter, particularly, is a new but extremely important area for the Commission. Both projects involve active collaboration with the Clinical Chemistry Division, and, for the former project, with its various trace element toxicology Subcommittees. At the Dortmund meeting, Dr.

Stoeppler was present to maintain this collaboration. Trace Organic Analysis is an extremely large field, and the logistics of tackling it are under consideration. Proposals for developing this project will be made to the Division Committee at Lyngby. The Commission expects to complete preparation of four reports at Lyngby; the launching of three new projects will be considered.

5.3 Commission V.3

The Commission met in Amsterdam, on 27 September 1982. All the six Titular Members, three Associate Members and one National Representative, as well as a Member of Commission V.1 attended. At the meeting administrative matters were discussed first, followed by a review of the various projects in which the Commission is involved.

Of the Division projects R. Frei reported on the status of the project *Determination of Trace Elements in Natural Waters*. G. Svehla then talked about the *Multilingual Dictionary*. Members expressed concern about lack of clear instructions on what is the intended form of the Dictionary, what languages are involved, who coordinates the project and what financial arrangements have been made. S. P. Perone then reported on the status of the new 'Compendium' or 'Manual', which is under the care of H. Freiser, an Associate Member of the Commission. All the Commission projects were discussed. New documents were submitted for ten of the projects currently on the Commission's list. It was agreed that all the corrections and modifications will be carried out and new documents presented at the 1983 General Assembly. Five of these projects have now been completed. Projects emanating from other Commissions, submitted to V.3 for comments were finally discussed.

Since the 1981 Leuven meeting five 'Ordinary' projects have been completed (*Nomenclatures for Automated Analysis*, *Thermal Analysis Parts III, IV, and V*, and *Chiroptical Methods*) as well as three 'Development and Publication' projects (*Precipitation Methods*, *Ion Selective Electrodes*, *Liquid-Liquid Extraction*). The Commission hopes to finalize further projects at Lyngby and review those which were started recently.

5.4 Commission V.4

Two reports have been published in PAC. The present activity of the Commission is reflected by the documents which are in course of preparation. The Commission suffered the loss of its able Secretary, Dr. R. Jenkins, who had to resign because of pressure of work. Dr. P. Butler accepted the position of Acting Secretary. One small official meeting was held at Utrecht, 18–20 October 1982, to discuss four of the documents under preparation. Several other unofficial meetings were held between various members of task groups active in preparing documents.

The document on *Radiation Sources* is of considerable value to atomic analytical spectroscopists and was published as a provision report in PAC. It has now been rewritten in part and it is hoped to have the final copy in time for Lyngby. The provisional report on *Molecular Luminescence Spectroscopy*, published in PAC (October 1982), was discussed at the meeting and the revised document will be submit-

ted for final publication. Reports on *Molecular Absorption Spectroscopy* (Ultraviolet and Visible) and on a revised system for designating X-ray Emission Radiation will be submitted at Lyngby.

The document *Instrumentation for the Spectral Dispersion and Isolation of Radiation* is in its final stage of preparation and the report on *Radiation Detectors* is in early stages of preparation. The participation of the Commission in the Division project on *Trace Metal in Natural Waters* is under way and a preliminary document covering several stages is nearing completion.

5.5 Commission V.5

This Commission is particularly active and its efficiency must be recorded. It held a meeting on 22 November 1982. The President of the Analytical Division, F. Pellerin, and observers from Commissions V.6 and V.3 attended part of the discussions. The status of work since Leuven and the programming of Lyngby were reviewed. In particular, organization of a project by the Division and its Commissions on trace elements in natural waters was examined with its coordinator, Prof. W. Nürnberg.

Two books have been published, another is at the printer's and four are under review by IDCNS or being circulated by the Division.

The activities of the Commission can be presented under three headings:

Major projects

(a) *Definition of pH Scales, Standard Reference Values, Measurement of pH and related terminology*

In co-operation with Commission I.1, an authoritative document has been completed, culminating an effort initiated in 1977. Approval of the Divisions of Analytical and Physical Chemistry has been obtained by an expedited procedure. Approval by ICDNS is pending.

(b) The preparation of an authoritative monograph, *Oxidation-Reduction Potentials in Aqueous Solutions* (an update of Latimer's classic), is nearing completion under the joint auspices of Commissions I.3 and V.5.

(c) Projects of the *traditional IUPAC type*: pH scales in nonaqueous and mixed solvents; standard systems for heterogeneous charge transfer, rates, etc...

Projects completed (See also attached bibliography)

A paperback book on *Recommended Methods for Purification of Solvents and Tests for Impurities* has been published (Pergamon Press, Oxford, 1982). A report entitled *pH Measurements in the Marine Environment* has been published in PAC. Another report entitled *Thermodynamic Functions of Transfer of Single Ions From Water to Nonaqueous and Mixed Solvents, Part I* is in press in PAC.

Publication of reports of Commission V.5 in the People's Republic of China (PRC)

Professor Hung Kao, an Associate Member of Commission V.5 from the PRC, is in the process of translating the following four publications which have appeared in PAC:

Classification and Nomenclature of Electroanalytical Techniques, PAC, **45**, 81, 115 (1976);

Continued on p. 35

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(Subject to approval by National Adhering Organizations)

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Federation of Asian Chemical Societies (FACS)

The Malaysian Institute of Chemistry is organizing, on behalf of FACS, a conference (supported by COSTED) on Priorities in Chemistry in Development of Asia, Kuala Lumpur, 29–31 March 1984, (PRIOCHEM ASIA 1984). It is a follow-up meeting to that held in 1981 and has the overall objective of assessing the progress made since 1981 and any changes in priorities necessitated by the rapid developments taking place in the Asian region. The

conference will comprise: a symposium on Chemistry and the Environment in Asia; a workshop on University–Industry Interaction — Mechanism and Experiences; a workshop on Chemical Industries in the Development of Asia; a pre-conference short course on Management and Treatment of Rubber and Oil Palm Wastes; technical and poster sessions. Further information can be obtained from Hon. Secretary, Malaysian Institute of Chemistry, c/o Rubber Research Institute of Malaysia, P.O. Box 150, Kuala Lumpur, Malaysia. The official language for the conference will be English.

Federation of European Chemical Societies, (FECS)

Seventeen member societies of the FECS were represented at its 14th General Assembly in Sandefjord, Norway, 16–17 June 1983. The delegates stood in honour of Dr. Miklos Preisich (Hungary), who died on 19 May 1983. Dr. Preisich helped prepare the basis for foundation of the Federation in 1980. Since then he had been one of the Secretaries of FECS and, with his personal enthusiasm for all-European cooperation and his efficiency, he contributed considerably to what FECS now is and to the esteem which the Federation enjoys throughout the world. The East European Secretariat will in fact continue to be run by the Hungarian Chemical Society with Dr. A. Jakabos responsible for the work. Prof. V. P. Zubov (USSR) will now chair the FECS Advisory Board. Österreichische Gesellschaft für Mikrochemie and Analytische Chemie and Gesellschaft Luxemburger Chemiker were accepted to membership of the Federation.

A new orientation has been agreed for the Working Party on Professional Affairs: chemistry and chemists and their socio-economic environment. This will result in so-called “interface papers”, the first of which may deal with professional workers in chemistry and trade unions. Interfaces between food chemists and veterinarians, chemists and pharmacists, chemists and hygienists, etc., are other possibilities. Attention was drawn to the recommendations arising from the third in the series of symposia on laboratory safety — Health and Safety in the Chemical Laboratory: Where do we go from here? — held at Lancaster, UK, 12–13 April 1983.

The Working Party on Organometallic Chemistry stressed the importance of the FECHEM Conferences on Organometallic Chemistry, which are similar to Gordon and EUCHEM meetings and follow similar rules. The schedule agreed for the next few years is:

5th Conference, 1984, Montpellier, France.

6th Conference, 1985, Riga, USSR — in combination with celebration of the 90th birthday of Prof. Rasuwajew.

7th Conference, 1986, Spain.

The invited lecturers from EUROANALYSIS IV (Helsinki/Espoo, Finland, 23–28 August 1981) are available in a volume entitled *Reviews on Analytical Chemistry*, edited by L. Niinistö, at FIM 160 from the Association of Finnish Chemical Societies. *Air Pollutants Affecting Plants (including indirect effects through water and soil)* will be the title of the 2nd European Symposium on Chemistry and the Environment at Lindau/Lake Constance, FRG, 21–25 May 1984.

In connexion with the Working Party on History of Chemistry, it was noted that the 150th birthday of Mendeleev will be celebrated on 8 February 1984 at Tobolsk in Siberia, where he was born. Establishment of a Working Party on Chemistry for Developing Countries was deferred, pending more definite proposals for its activities.

M. Williams



Prof. S. G. Terjesen, President, and Dr. Astri Rogstad, Secretary General, of the Norwegian Chemical Society which hosted the very successful FECS meeting

Association of Official Analytical Chemists (AOAC)

The Association of Official Analytical Chemists, an Associated Organization of IUPAC, will be celebrating its 100th anniversary in 1984. A major meeting planned for this centennial year is the 98th Annual International Meeting, 27 October–2 November 1984, Washington DC, USA, during which four symposia will be held — Education in modern analytical chemistry; Quality assurance/quality control for analytical laboratories; Environmental toxicology and chemical analysis; Chromatographic methods in drug analysis of body fluids. More information on this and other celebratory meetings may be obtained from Mrs K. M. Fominaga, Association of Official Analytical Chemists, 1111 N 19th Street, Suite 210, Arlington, VA 22209, USA.

Just before the International Meeting — from 25 to 27 October — there is a joint IUPAC-AOAC meeting, the 2nd International Symposium on the Harmonization of Collaborative Analytical Studies, which should serve as an attractive starter for the proceedings to follow.

Status of the Faraday Constant as an Analytical Standard, PAC, 45, 125 (1976);
Recommendations for Sign Conventions and Plotting of Electrochemical Data, PAC, 45, 131 (1976);
Recommended Terms, Symbols and Definitions for Electroanalytical Chemistry, PAC, 51, 1159 (1979).

5.6 Commission V.6

The Commission is very active, as appears from the Current Programmes and its publications since the Leuven Assembly. Within the framework of the long range projects, the stability data compilation is meant to embrace not only all equilibrium constants published for metal ion complexes in aqueous, as well as in nonaqueous solutions, but also the enthalpy and the entropy changes of the reactions involved. Both complexes of inorganic and organic ligands are included; in recent years by far the largest number of data have referred to the latter. It is generally agreed that this compilation has been very valuable for scientists working in the most diverse fields of chemistry. Until now, this compilation has been effected by a small number of dedicated men, in the first place, L. G. Sillen, E. Martell, E. Högfeldt and D. Perrin, to whom the chemical community is indeed indebted. A team of compilers is being set up; they are all to report to Dr. L. Pettit. The data compiled should then be put into computer storage, according to a program which allows both immediate access, and the printout of camera-ready manuscripts for the production of further printed volumes at suitable intervals. These could be either further supplements to the existing volumes, or completely reorganized so as to contain all data so far compiled in systematic order. This part of the work is in the hands of Prof. I. Grenthe, Royal Institute of Technology, Stockholm, who has the necessary computer facilities. It is hoped that this organization will come into working order during 1983.

Ionization Constants of Acids and Bases

The compilation was done in volumes appearing in 1961, 1965 and 1969. Later, supplements have appeared to the organic acids, by E. P. Serjeant and B. Dempsey, and for the organic bases, by D. D. Perrin, which cover the literature to the end of 1970. The inorganic acids and bases have appeared (1982) in a new edition, covering all data published to the end of 1980. Work on further supplements is in progress. In future, when the present compilers are not prepared to continue, a new organization will have to be considered for this project also. The experience gained in the previous one will then be valuable.

Critical Surveys of Stability Constants

In the comprehensive compilations discussed above, no judgments are generally made on the quality of the data listed. The Commission has therefore embarked upon a series of Critical Surveys, each one covering the complexes of one, or a few related, important ligands. Two more surveys have been approved for publication.

The major project of Commission V.6 is data registration. It has acquired experience and skill in this field that deserve to be exploited in the

framework of the Subcommittee on Numeric Data Bases.

5.7 Commission V.7

The Commission was suspended at the 31st General Assembly. One report was published since the Leuven meeting: Glossary of Terms used in Nuclear Analytical Chemistry (M. de Bruin) PAC, Vol. 84 pp. 1533–1554 (1982). Two reports are ready for publication: *Methods for the Determination of Fissile and Fertile Elements* and *Ion Exchange Separation in Radioanalytical Chemistry*.

Commission V.7 will probably not continue to exist in its present form after the Lyngby meeting. Six final reports are expected or have been submitted to the Division.

5.8 Commission V.8

Since the 31st General Assembly the activities of the Commission resulted in the publication of two volumes of the *Solubility Data Series: Volume 9 — Ethane*, and *Volume 10 — Nitrogen and Air*. An additional three volumes have been submitted for publication and will appear in print before the 32nd General Assembly. They are: *Alkaline-Earth Metal Halates*, *Lanthanide Nitrates*, and *Sulphur Dioxide*. Before the end of 1983 the manuscript of the volumes on *Alkali Metal Halates*; *Antibiotics. Part I. Lactams*; *Propane and Butane*; *Alcohols in Water*; and *Benzene in Water* will be submitted to the publisher. The Commission received financial support from a UNESCO-ICSU grant.

Commission V.8 is confronted with the problems of numeric data bases and can furnish its contribution to the Subcommittee that has been set up. The Commission and the Sub-Commissions subordinate to it are engaged in intense activity, some of whose aspects extend beyond the framework of the Analytical Chemistry Division from an administrative, financial and editorial as well as a scientific standpoint; certain subjects dealt with cannot be exactly classified as analytical chemistry. These problems were analyzed in the Critical Assessment by Vice-President Schneider. A thorough study of these facts will have to be made.

6. Collaboration with other organizations

The Analytical Chemistry Division has continued its active collaboration with ISO. Since September 1981, 36 proposed ISO standard methods have been reviewed and commented on by the Division. At the present time there are no ISO methods under review by the Division. For the corresponding period from September 1979 to September 1981, 44 methods were reviewed and commented on. These figures reflect a slight decrease in the number of methods submitted by ISO in the period since the General Assembly at Leuven in 1981. ISO has routinely acknowledged IUPAC comments in their standard methods. No substantive disagreement with IUPAC comments has occurred. In summary, the number of ISO methods submitted for comment has decreased slightly from the previous two-year period but still remains high. The collaboration between organizations continues to function well.

The Analytical Chemistry Division took part in the International Symposium on Trace Analysis and

Technological Development (Bombay 1982), the Symposium on Harmonization of Collaborative Analytical Studies (Helsinki 1981), as well as the International Conference on Atomic Spectroscopy and the 22nd International Conference on Spectroscopy (Tokyo 1981). Its participation resulted in the publication of work in 1982. A second Symposium on Harmonization is scheduled to be held in Washington, D.C. in 1984. The Division's participation which, in principle, has been scheduled, will be definitely settled in Lyngby.

7. Long-range objectives and possible future programmes of the Division and Commissions

Some of the Commissions have listed probable future programmes. In each field, the compilation of data used in analytical chemistry and their critical evaluation, the standardization of nomenclature, the critical assessment of analytical techniques, the definition of recommended procedure, the preparation and handling of standard reference materials appear to be the top-priority subjects which recur most frequently in the preoccupations of the Commissions. In any case, in the present situation the projects must remain realistic so as to furnish regular demonstration of their evolution by publications designed to be integrated into a structured whole. It is in this perspective that the project on trace elements in natural waters is being conducted.

In conclusion, the examination of the work shows that in the last two years the Analytical Chemistry Division has been very active, as was emphasized by Vice-President Schneider in his critical assessment of programmes and projects. The role of the Division and its Commissions has not been confined to the standardization of nomenclature and methods, or to the compilation of results, which constitute its traditional fields of interest and its regular work. Its role is likewise to provide contact and service regularly between the basic and applied disciplines; it includes the development of modern approaches to handling analytical problems in the various fields of applied chemistry. In the framework of analytical chemistry as normally defined, the objective of the Division and its Commissions lies in the development of each branch of analysis and, at the same time, the critical and comparative evaluation of the means and methods that it offers analytical chemists to enable them to choose the solutions appropriate to their own particular problems, on the basis of a knowledge of the alternatives.

These are the objectives sought by the Analytical Chemistry Division and given material form by a substantial number of publications and a regular programme. Any evolution involves an open-minded attitude, gradual transformation and choices suitable to the needs and problems; carrying out these concepts constitutes, for the Division, a sign of steady, regular progress and a guarantee of vitality and efficiency.

F. Pellerin

Appendix: Publications of the Analytical Chemistry Division

Nomenclature Reports in Analytical Chemistry
Recommendations for Publishing Manuscripts on Ion-Selective Electrodes, PAC, Vol. 53, pp. 1907–1912 (1981) — Commission V.3.

Nomenclature, Symbols, Units and their Usage in Spectrochemical Analysis: Radiation Sources (*Provisional*), PAC, Vol. 53, pp. 1913–1952 (1981) — Commission V.4.

Nomenclature, Symbols, Units and their Usage in Spectrochemical Analysis: Molecular Luminescence Spectroscopy (*Provisional*), PAC, Vol. 53, pp. 1953–1966 (1981) — Commission V.4.

Glossary of Terms Used in Nuclear Analytical Chemistry (*Provisional*), PAC, Vol. 54, pp. 1533–1554 (1982) — Commission V. 7.

Technical reports

Recommendations for Publication of Papers on Precipitation Methods of Gravimetric Analysis, PAC, Vol. 53, pp. 2303–2306 (1981) — Commission V.3.

pH Measurements in the Marine Environment, PAC, Vol. 54, pp. 229–232 (1982) — Commission V.5.

Separating and Preconcentration of Trace Substances III. Flotation as a Preconcentration Technique, PAC, Vol. 54, pp. 1555–1563 (1982) — Commission V.2.

General Aspects of Trace Analytical Methods V. Comparison of the Ability of Trace Analytical Methods to Determine Small Amounts or Concentrations of Elements, PAC, Vol. 54, pp. 1565–1577 (1982) — Commission V.2.

Recommendations on Use of the Term Amplification Reactions, PAC, Vol. 54, pp. 2553–2556 (1983) — Commission V.1.

Critical Evaluation of Equilibrium Constants involving Acetylacetone and its Metal Chelates, PAC, Vol. 54, pp. 2557–2592 (1982) — Commission V.6.

Critical Evaluation of some Equilibrium Constants involving Acidic Organo-phosphorus Extractants, PAC, Vol. 54, pp. 2593–2674 (1982) — Commission V.6.

Guidelines for the Determination of Stability Constants, PAC, Vol. 54, pp. 2675–2692 (1982) — Commission V.6.

Critical Survey of Stability Constants of NTA Complexes, PAC, Vol. 54, pp. 2693–2758 (1982) — Commission V.6.

Solubility Data Series — Volume 9: Ethane (published in book form by Pergamon Press, Oxford, 1982) — Commission V.8.

Solubility Data Series — Volume 10: Nitrogen and Air (published in book form by Pergamon Press, Oxford, 1982) — Commission V.8.

Stability Constants of Metal-Ion Complexes. Part A: Inorganic Ligands (published in book form by Pergamon Press, Oxford, 1982) — Commission V.6.

Ionisation Constants of Inorganic Acids and Bases in Aqueous Solution (published in book form by Pergamon Press, Oxford, 1982) — Commission V.6.

Recommended Methods for Purification of Solvents and Tests for Impurities (published in book form by Pergamon Press, Oxford, 1982) — Commission V.5.

Recommendations for the Usage of Selective, Selectivity and Related Terms in Analytical Chemistry, PAC, Vol. 55, pp. 553–556 (1983) — Commission V.1.

Thermodynamic Functions of Transfer of Single Ions from Water to Nonaqueous and Mixed Solvents: Part 1 — Gibbs Free Energies of Transfer to Nonaqueous Solvents, PAC, Vol. 55, pp. 977–1021 (1983) — Commission V.5.

Compleximetric Indicators: Characteristics and Applications, PAC, Vol. 55, pp. 1137–1230 (1983) — Commission V.1.

Methods for the Determination of Fissile and Fertile Elements: Basic Data of Interest for the Spectrophotometric Determination of Thorium, PAC, Vol. 55, pp. 1231–1238 (1983) — Commission V.7.

Solubility Data Series — Volume 12: Sulfur Dioxide, Chlorine, Fluorine, Chlorine Oxides (in press, publication in book form by Pergamon Press, Oxford, 1983) — Commission V.8.

Solubility Data Series — Volume 13: Scandium, Yttrium, Lanthanum, and Lanthanide Nitrates (in press, publication in book form by Pergamon Press, Oxford, 1983) — Commission V.8.

Solubility Data Series — Volume 14: Alkaline Earth Metal Halates (in Pergamon's production department, publication in book form by Pergamon Press, Oxford, 1983) — Commission V.8.

Half-wave Potentials of Electroactive Substances in Hexamethylphosphoric Triamide, PAC, Vol. 55, pp. 1373–1380 (1983) — Commission V.5.

Lectures and Proceedings

Collaborative Interlaboratory Studies in Chemical Analysis. Lectures Presented at the International Symposium on Harmonization of Collaborative Analytical Studies, Helsinki, Finland, 20–21 August 1981.

Recent Advances in Analytical Spectroscopy. Proceedings of the 9th International Conference on Atomic Spectroscopy and 22nd Colloquium Spectroscopium Internationale, Tokyo, Japan, 4–8 September 1981.

International Symposium on Trace Analysis and Technological Development (Bombay 1981).

VI. APPLIED CHEMISTRY DIVISION

VI.1. Commission on Food Chemistry.

VI.2. Commission on Biotechnology.

VI.3. Commission on Oils, Fats, and Derivatives.

VI.4. Commission on Atmospheric Environment.

VI.5. Commission on Pesticide Chemistry.

VI.6. Commission of Water Quality.

VI.7. Commission on Reclamation of Solid Wastes (suspended 1981).

“Suspended” Commissions

The most striking development, for the Division, was the suspension, at Leuven, of Commission VI.7 and the setting “under review” of Commissions VI.4 and VI.6. While these decisions were not unanimously accepted by Division Members (as described in the Division President's reports of 1981 and 1982), the Division Committee decided to adhere to the requests agreed upon by the Council in 1981, rather than enter into a scientific controversy on the criticisms expressed in 1981. Consequently Working Groups, under participation of external experts, were set up to investigate the need or scope within which IUPAC should be engaged, if at all, in the fields of wastes, atmosphere and water.



Dr. H. Frehse, President, Division VI

After the Working Groups had reported to the Division Committee, the Committee, after thorough deliberations, submitted a report to Vice-President Dr. Schneider, recommending — in essence — that Commissions on Atmospheric and Water Chemistry should be re-established, and that problems related to solid wastes could be studied in conjunction with Water Chemistry. The Division's report was, in principle, accepted by Dr. Schneider, as reflected in his

Report on the Critical Assessment of IUPAC, dated 5 May 1983. The Executive Committee, at its 102nd Meeting in April 1983, fully endorsed the recommendations made by Dr. Schneider on the Commissions suspended in 1981.

Commissions VI.1, VI.3, VI.5

The following reports are based on summaries kindly prepared by the Commission Chairmen. In addition, the state-of-the-art of Commission projects were reviewed by the Chairmen earlier in 1983 to streamline and update the 1981 listings. At the same time, the lists of publications were updated for the 1983 Current Projects.

Commission VI.1

Several projects dealing with inorganic and organic contaminants have been continued and some of them successfully completed. Improved methods for the determination of fluorine, mercury and selenium in food will be tested in the near future. The work on the determination of tin has been published. A collaborative study on a method to determine *N*-heterocyclic carcinogens in food has been completed, and a publication is on the way. The project will be followed by one dealing with a rapid preselection method for benzo(a)pyrene. The project in the nitrosamine area will concentrate on the determination of total nitrosamines in food. The project on residues in edible products from treated livestock is mainly concentrated on residues of sulfonamides in muscle and liver, and methods of analysis for the determination of these compounds.

The **Working Group on Mycotoxins**, for which Dr. Pohland is the new Chairman, successfully terminated four projects after publication of the results: aflatoxin residues in foods of animal origin, a collaborative study of an aflatoxin M_1 procedure, a review of multimycotoxin screening procedures and the compilation of specifications for mycotoxin analytical standards. A project aimed at publishing a manual of sampling plans is inactive because of the death of Dr. A. Campbell. The Working Group is at present engaged in an IUPAC-AOAC collaborative study on ochratoxin; a planned collaborative study of a trichothecene TLC screening method; the International Check Sample Programme; a project aimed at publication of guidelines for safety evaluation of aflatoxin-contaminated feeds, and a new project aimed at developing information on the effects of processing on mycotoxins.

In 1982 the Commission was informed that Switzerland has proposed a 10 ppt (parts per trillion) limit for aflatoxin M_1 in ready-to-use baby food, and questioned the feasibility of developing a method capable of determining such low levels. The consensus of the Commission was that such a method does not exist and any current method collaboratively studied at that level would fail. Meanwhile the US Food and Drug Administration, represented by Dr. Horwitz, fully confirmed the Commissions' opinion and stated (February 1983) that there has been no change in the methodology situation that would suggest revising this opinion.

The **Working Group on Aquatic Biotoxins** under the Chairmanship of Prof. Krogh predominantly

works on a method for the chemical determination of paralytical shellfish poisons. However, up till now only biological testing using mice as test animals gives conclusive results.

Both Working Groups have been responsible for the organization and the scientific programme of the 5th International IUPAC Symposium on Mycotoxins and Phycotoxins, Vienna, Austria, 1-3 September 1982. Of the 83 papers presented, 13 involved trichothecenes and 18 ochratoxin. Highlighted were papers by van Rensburg (S. Africa) on the possible relationship between mycotoxin exposure and esophageal cancer, and a paper by Bayley (Zambia) on the involvement of hepatitis caused by ochratoxin in human nephropathy. The proceedings for the symposium have already been published through private initiative of the organizers, since negotiations with Pergamon Press failed. The organization of the 6th International IUPAC Symposium on Mycotoxins and Phycotoxins to be held in 1985 at Lyon, France, in co-operation with the International Agency for Research on Cancer, has started.

By invitation of the National Representative of Austria, Dr. Czedik-Eysenberg, the annual meeting of Commission VI.1 took place in Vienna immediately preceding the Symposium on Mycotoxins and Phycotoxins. This coincidence enabled a large number (approx. 30) of observers and members co-opted to the Working Groups to attend the meetings, indicating the interest in the Commission's activities.

Commission VI.3

Representatives of more than 30 countries are currently members of the Commission. The current agenda of the Commission includes development, approval and review of methods for erythrodiol in olive oil, total sterols in fats and oils, emulsifiers, analysis of commercial lecithins, solvent residues in oilseed cake, triglyceride composition of fats and oils by GLC, thiobarbituric acid value, and linolenic and other *n*-3 fatty acids (the last a new topic). Other new topics under consideration include determination of tocopherols by HPLC, trans isomers by infrared spectrophotometry, metal content by atomic absorption spectrophotometry, and butyric acid for detection of butterfat. Methods adopted at the Commission meeting in Zeist in September 1982 include the determination of erythrodiol, total sterols, total phospholipids and insoluble impurities in commercial lecithins, and phosphorus content and phospholipids in commercial lecithins. Currently, additional collaborative studies of the methods for total sterols, erythrodiol and commercial lecithins are proceeding to obtain additional data for statistical evaluations. Also, the method for determination of triglyceride composition is undergoing further collaborative study.

Methods for oils and fats, commercial glycerol and alkaline soaps, comprising parts 5 and 6 of the 1st Supplement of the *Standard Methods for the Analysis of Oils, Fats, and Derivatives*, were published. Included were recently adopted methods for determination of erucic acid, linoleic acid, and solid content in fats by low resolution NMR. Reports of results of collaborative study of methods for polar compounds in frying fats and erucic acid in the presence of other docosenoic acid isomers have been

submitted for publication to PAC. Arrangements are currently being made to publish an enlarged 6th edition of the Standard Methods, incorporating the 6 parts published in PAC subsequent to publication of the hard cover 6th edition in 1979.

Dr. F. B. Shorland, New Zealand National Representative, was the official IUPAC representative at the IUPAC-sponsored International Conference on Oils, Fats and Waxes, Auckland, New Zealand, 13–17 February 1983. Dr. Shorland's opening remarks as official IUPAC representative lauded the work of IUPAC in the promotion of chemistry and chemical education. Dr. Shorland submitted an excellent report summarizing the conference's activities and highlights.

The Commission continued to provide input to the work programs of ISO/TC 34/SC 11 and the Codex Commission on Oils and Fats.

Commission VI.5

The major Commission activities since the last meeting were sponsorship and co-operation in the organization of the scientific framework of the 5th International Congress of Pesticide Chemistry, Kyoto, Japan, 29 August–4 September 1982. More than 1600 scientists from 55 countries attended the Congress. The Proceedings of the Congress are bound in four volumes containing more than 1750 pages. The volumes are entitled *Pesticide Chemistry—Human Welfare and the Environment* and include I. *Synthesis and Structure–Activity Relationships*, II. *Natural Products*, III. *Mode of Action, Metabolism and Toxicology*, IV. *Pesticide Residues and Formulation Chemistry*. Commission members made a substantial contribution to papers published in the Proceedings.

A major Commission report, *Recommended Approaches to the Production and Evaluation of Data on Pesticide Residues in Food* was widely distributed to pesticide chemists on an international basis, in cooperation with FAO. The 89-page report, which outlines methods for designing experiments and gathering pesticide residue data, makes a substantial contribution toward harmonization of data requirements between nations that export substantial food commodities. A final draft has been submitted on a project entitled *Improved Cost/Effective Approaches to Residue Analysis* that should prove extremely helpful to both government and private laboratories conducting pesticide residue analysis. By the use of automation, microanalysis, and new analytical technology, substantial cost reductions can be achieved in chemical laboratories without adversely affecting the quality of data.

In conjunction with the 5th International Congress of Pesticide Chemistry, the Commission held a meeting at Hakone, Japan, to review and identify new project areas. The four new projects identified at Hakone were *Application of Multiresidue Methods for Analysis of Samples of Unknown Origin*; *Precision, Accuracy and Compatibility of Pesticide Residue Analytical Results*; *Pesticide Dynamics in Groundwater and Its Interface*; and *Chemical Pathways of Mammalian Metabolism of Pesticides*. An exploratory project entitled *Microbial Enzyme Adaptation to Pesticides* will also be under-

taken. Preliminary drafts of these reports will be discussed at the 1983 meetings.

Commission VI.2

A report on the activities of the Commission was not made available. Projects of the Commission include *Proposed Guidelines for Methodologies, such as Measurement of Cellulase Activity* — in the context of the bioconversion of renewable resources — and *Testing of Quality and Safety of Live Fungal Products for Agricultural Use* (liaison with Commission VI.5).

An evaluation of two simple methods for the measurement of the fermenting power of baker's yeast, and a list of symbols with units recommended for use in biotechnology have been published.

Pending issues

Based on its own observations, and supported by reactions from Commissions, the Division would like (a) to receive guidance on the question how to define a "Commission publication", and (b) to promote the philosophy that participation, by a Commission, in the *scientific* organization of an IUPAC-sponsored Congress, Symposium, etc., should be regarded and listed as a Commission project.

H. Frehse

VII. CLINICAL CHEMISTRY DIVISION

- VII.1. Commission on Automation and Clinical Chemical Techniques.
- VII.2. Commission on Quantities and Units.
- VII.3. Commission on Teaching.
- VII.4. Commission on Toxicology.

Division Committee

During the 1981–1983 biennium, the officers and Members of the Division Committee have accomplished the following tasks: (a) establishment of an effective mechanism for IUPAC collaboration with WHO (Geneva) for expert consultations and joint work programmes in clinical chemistry; (b) creation of formal liaison with IUTOX, the new International Union of Toxicology, and maintenance of existing liaisons with IFCC, IUB, ICSH, COWS/WASP, and IUPHAR; (c) cooperation with Dr. H. Egan and the IUPAC Applied Chemistry and Analytical Chemistry Divisions in organizing an International Conference on Harmonization of Collaborative Analytical Studies, to be held in Washington, D.C. U.S.A. (25–27 October 1984) with joint AOAC sponsorship; (d) comprehensive reorganization of operating procedures for the Division, with creation of a newsletter to facilitate communications from the Division's Secretary, and establishment of a formal system for critical review of documents prepared by Commissions and Subcommittees; and (e) tabulation of all published



Prof. F. W. Sunderman, Jr., President, Division VII

reports of the Clinical Chemistry Division. The Division Committee conducted its work by correspondence; the Executive Committee met twice (Dublin, Ireland, 6 June 1982, and Paris, France, 4 March 1983).

Subcommittee on clinical chemistry standards

This Subcommittee conducted its work by correspondence. The Subcommittee prepared a position paper on *Standardization in Clinical Chemistry* that was presented at an International Workshop on Biomedical Standardization (Atlanta, U.S.A. 9–11 June 1982) sponsored by IUPAC, IFCC, ECCLS, and NCCLS. The Subcommittee conscientiously reviewed numerous documents that were referred by WHO or ISO (e.g. reference methods for various enzyme assays; guidelines for quality control in clinical chemistry, guidelines on reference material certificates), and documents prepared by other IUPAC Divisions (e.g. Commission I.4's annotated bibliography on accuracy in measurements). A major facet of the Subcommittee's work was systematic review of draft documents prepared by Commissions of the Clinical Chemistry Division.

Commission activities

Commission VII.1 met in Hanover, FRG, (15–16 November 1982) to complete draft documents on (a) nomenclature for automated and mechanized analysis, and (b) instruments for automated analysis in clinical chemistry, for submission to the Clinical Chemistry Division. The later document entitled *Characteristics and Attributes of Instruments Intended for Automated Analysis in Clinical Chemistry* has been published, PAC, Vol. 55, pp. 1041–1048 (1983). Commission VII.1 began work on new documents on (a) electronic data processing and microprocessing in clinical chemistry, and (b) bioanalytical nomenclature; further work on these documents will be the principal task for the Commis-

sion's deliberations in Lyngby, Denmark, in August 1983. The Commission sponsored an International Conference on Automation in the Clinical Chemistry Laboratory (Barcelona, Spain, 19–22 April 1982).

Commission VII.2 held three meetings (Rungstedgaard, Denmark, 9–14 May 1982; Brussels, Belgium, 8–10 November 1982; Maastricht, Netherlands, 21–23 March 1983) to work on four documents that are at, or almost at, the stage of submission to the Clinical Chemistry Division. These documents are concerned, respectively, with recommendations on (a) the unit "one", (b) activities and activity coefficients, (c) nebulizer and flame properties in emission and absorption spectroscopy, and (d) nomenclature of derived quantities. In addition, the Commission VII.2 worked jointly with Commission I.5 to draft a document on quantities and units in optical spectroscopy.

Commission VII.3 met in Rungstedgaard, Denmark (9–14 May 1982) to address its numerous ongoing projects, and to discuss in detail a document on training programs for technical and scientific personnel in clinical chemistry. In addition, the Commission drafted a preamble to its scheme for a two-year postgraduate course in clinical chemistry, in order to define the aims of the proposal and the population toward which the document was directed. The document was subsequently published, PAC, Vol. 55 pp. 557–564 (1983). Several members of the Commission attended the Asian-Pacific Congress on Clinical Chemistry (Singapore, September 1982) and assisted in training and educational programs in clinical chemistry for developing countries.

Commission VII.4 met in Dublin, Ireland (9–10 June 1982) to review the work of its Subcommittees and to make final arrangements for the 2nd International Conference on Clinical Chemistry and Chemical Toxicology of Metals, to be held in Montreal, Canada (19–22 July 1983). The Commission prepared recommendations to the Clinical Chemistry Division for establishment of (a) an ad hoc Task Force on Quality Control and Reference Materials for Toxicology Laboratories, and (b) a new Subcommittee on Environmental and Occupational Toxicology of Chromium.

The **Subcommittee on Aluminium** organized two international conferences on aluminium toxicology during the 1981–1983 biennium. The International Workshop on the Role of Biological Monitoring in Prevention of Aluminium Toxicity in Man was held in Luxembourg (5–7 July 1982) with co-sponsorship by the Commission of the European Communities. The International Symposium on Aluminium Analysis in Biological Fluids was held in Charlottesville, Virginia (15–18 June 1983), with co-sponsorship of the Aluminium Manufacturers' Association. Recommendations on aluminium analysis in biological fluids were published (*J. Clin. Chem. Clin. Biochem.* **20**, 837–839, 1982).

The **Subcommittee on Cadmium** organized an International Workshop on Biological Indicators of Cadmium Exposure in Luxembourg (5–7 July 1982), with co-sponsorship by the Commission of the European Communities. A second interlaboratory survey of blood cadmium analyses was completed, and work was begun on a blood cadmium reference method.

Members of the Subcommittee began to prepare a review of β_2 -microglobulin analysis and to develop a reference method for metallothionein.

The **Subcommittee on Nickel** organized an International Conference on Nickel Toxicology (Dublin, Ireland, 5–8 June 1982). A document on collection, storage, and shipment of biological samples for nickel analysis was drafted, and a task-force was appointed to draft recommendations on classifica-

tion and nomenclature of nickel-binding macromolecular constituents in tissues.

The **Subcommittee on Selenium** conducted its first interlaboratory survey of selenium analyses in body fluids, with participation of 40 laboratories worldwide.

F. William Sunderman Jr.

IUPAC recommendations on nomenclature and symbols: revision of a revised procedure

The production of recommendations on nomenclature and symbols (N and S) is surely the most important end product of the work of the IUPAC Divisions, being that of the second listed object (Statute S2.2) of the Union. This opinion has been expressed many times, most recently by Prof. R. Sammet, President of Gesellschaft Deutscher Chemiker, in his Address to the 29th IUPAC Congress in Cologne, June 1983 (*Chem. Int.*, 1983, No. 4, pp. 30–33).

Work in this field is beset with difficulties from the outset. Normally, one cannot start naming and/or allocating symbols to things or processes that may never actually happen and for which no experts, naturally, exist. By the time it has become apparent that, to quote Statute S2.2, "regulation, standardization or codification" is necessary, it is often too late: some prejudices and conventions will have become established which may or may not be mutually compatible and may or may not have sound bases — unfortunately often not in both cases!

However, having decided that an N and S project is required, a Commission has to find a project leader who knows the field well but who is not so dogmatic that reasoned argument within his* group will be allowed and treated on its merits, and is willing to devote the time to the exercise. This is the second hurdle.

The project leader then has to decide how to proceed with his task. Should he invite suggestions from some, or all, known workers in the field and then try to reconcile the varied and conflicting proposals, thus making enemies of those whose proposals he rejects, or should

he circulate his own suggestions and invite comments from some, or all, of the known workers, thus running the risk of being ignored by some who have mistakenly taken this procedure as the mark of an arrogant know-all? As it is usually impracticable to consult all known workers in the field, the project leader may well have upset somebody he didn't consult in any case. The third hurdle.

Having, somehow, overcome these initial problems, the next stage is the hard, lengthy, sometimes frustrating but nevertheless interesting process of discussing, compromising, drafting and redrafting the proposals until finally (although not by any means the end of the story) a draft is presented for Commission and, if all goes well, Division approval. Now comes the process of attempting to get international comment and agreement before the proposals are submitted to IDCNS on behalf of Council for official IUPAC approval. This process has been the subject of change over the years — each change being designed to try to achieve a wider dissemination of the proposals amongst potentially interested scientists for two purposes: to invite further comment and hence to increase the chances of universal acceptance of the recommendation when finally approved. A brief review of the more recent history of the post-Division approval procedure may be of interest.

During the period when the IUPAC Secretariat was located in Basle, Switzerland, and the *Information Bulletin* (IB) was published from there, the so-called Tentative Recommendations were published in this bulletin with a request that comments should be sent to the originators of the recommendations within eight months of the date of publication. The IB was distributed to all members of IUPAC

*For 'his' read 'her', 'he' read 'she', etc., if appropriate.

bodies and the National Adhering Organizations, but was not well known outside IUPAC. In 1968 the IUPAC Secretariat was established in Oxford, UK, and in 1970 a series of Appendices (on Tentative Nomenclature, Symbols, Units and Standards) was started. With slight changes of title — *Provisional Nomenclature*, 1974, and Symbols, *Terminology, and Conventions*, 1977 — the series continued until No. 69, December 1977. These 'yellow' booklets had the same distribution as the IB but copies were, in addition, sent to scientists recommended by the originating Commission. As usual the statutory eight-month deadline for comments was set.

Subsequently it was decided to publish provisional recommendations in the Union's journal, *Pure and Applied Chemistry*, after approval by the Interdivisional Committee on Nomenclature and Symbols (IDCNS, established in its present form in 1975), with a mention in IB (later, 1979, to become *Chemistry International*, CI). In all cases, after consideration of the comments received by the relevant Commission, the revised recommendations had to receive Division and, latterly, IDCNS approval before being published in PAC as 'final' ('definitive') recommendations. None of these procedures relieved our project leader of the agonizing delay of at least 12 to 18 months between the production of what he hoped was a satisfactory document and its final acceptance and publication.

At Leuven in 1981, at the instigation of Dr. K. L. Loening (Chairman of IDCNS), the IUPAC Executive Committee approved in principle a new system which avoided the double publication of recommendations (in provisional and then definitive forms) in PAC but still provided the opportunity for world-wide comment on these provisional proposals (*Chem. Int.*, 1982, No. 2, p. 25). However, this system was not put into effect because of reorganization of the IUPAC Secretariat which, under the system, would have been heavily involved in distribution of provisional proposals. The 'Leuven' procedure has now itself been revised and its successor is to run for a two-year period between General Assemblies 1983 and 1985. To avoid any misunderstanding that might arise from attempting to summarize the procedure, it is reproduced in full below. The main points of difference from the older, pre-'Leuven' procedure are:

- (a) the Commission has to name the experts consulted in the preparation of the provisional recommendation document;
- (b) editors of journals have to be involved in the preparation of the document;
- (c) the synopsis will not only be published in CI but in national chemistry news jour-

nals (via national/regional centres), but the full (provisional) document will not be published at all;

- (d) copies of the provisional document, for comment only, may be obtained from the relevant national/regional centres, *not* from the IUPAC Secretariat, thus ensuring a more rapid supply of copies for comment;
- (e) the revised recommendations, when published in PAC will have no (provisional or definitive) label but only their year of adoption, thus recognizing that there is no such thing as final in a continuously advancing science.

Revised procedure for comment and approval of IUPAC recommendations on nomenclature and symbols

1. Provisional recommendations by the Commission should be submitted to the Secretariat via, and with the approval of, the Commission Chairman and the Division President. There should normally have been taken into account comments from about 15 experts on the subject matter of the document, including about three manuscript editors of journals that publish substantial numbers of papers in the relevant field of chemistry. The names and addresses of the experts and/or editors that have been consulted must be submitted with the provisional recommendations; Titular or Associate Members of the Commission in question should only be included on the list if they have specific expertise in the subject.

2. The provisional recommendations sent to the Secretariat must include:

- (a) a 200-word synopsis;
- (b) the name and address of the Commission member acting as document editor to whom comments should be sent;
- (c) the name of the Commission member who will eventually prepare camera-ready copy for publication in PAC.

3. The provisional recommendations will be sent from the Secretariat to the Chairman and Secretary of IDCNS for approval, with copy letters to Members of IDCNS (giving them the opportunity to request a review copy for comment within three months to IDCNS Officers). The names and addresses of the experts and/or editors consulted by the relevant Commissions (see 1 above) will also be sent to the IDCNS Officers to ensure they do not approach the same persons (see 4).

4. The IDCNS Chairman, on suggestions from members of IDCNS and/or if he considers it to be desirable, may instruct the Secretariat to send the provisional recommendations to further experts and/or editors whose names and addresses are supplied by him. He will also signify his approval, or otherwise, of the synopsis.

5. The synopsis, if approved, will be sent, with a note that a copy of the provisional recommen-

dations may be obtained *only* for comment, from the Secretariat for publication in:

- (a) *Chemistry International*;
- (b) national chemistry news journals via certain national/regional centres.

6. All those who are sent, or send for, a copy of the provisional recommendations will be asked to return their comments to the document editor within eight months of the approval of IDCNS.

7. Not less than eight months after approval by IDCNS the provisional recommendations will be revised, as necessary, by the Commission to take into account comments received.

8. The revised recommendations will be resubmitted to the Secretariat, via the Commission Chairman and Division President, for approval by IDCNS.

9. The revised recommendations, with their date (year) of adoption, will be published in PAC.

10. Publication of the revised recommendations will be announced in *Chemistry International*.

There are obvious advantages in this new system but not, unfortunately but inevitably, any reduction in the delay between the original Commission approval of the document and its eventual adoption by the Union. The project leader's second term on the Commission will thus continue to be assured!

The following organizations have agreed to act as national/regional centres under these new arrangements:

Australia and New Zealand

Mr. Robert Schoenfeld, Australian Journal of Chemistry, POB 89, 314 Albert Street, East Melbourne, Victoria 3002, Australia.

Canada

Dr. John ApSimon, Department of Chemistry, Carleton University, Ottawa, Ontario K1S 5B6, Canada.

China/Taiwan

Dr. F. C. Chen, Department of Chemistry, National Taiwan University, P.O. Box 30-373, Taipei 107, Taiwan.

FRG and Switzerland

Dr. W. Fritsche, Deutscher Zentrallausschuss für Chemie, Postfach 900440, Varrentrappstrasse 40-42, D-6000 Frankfurt/Main 90, Federal Republic of Germany.

Israel

Prof. S. Sarel, Department of Pharmaceutical Chemistry, School of Pharmacy, Hebrew University of Jerusalem, POB 12065, Jerusalem, Israel.

Japan

Dr. H. Hamada, Executive Director, Chemical Society of Japan, 1-5, Kanda Surugadai, Chiyoda-ku, Tokyo, 101 Japan.

Netherlands

Dr. E. J. de Ryck van der Gracht, Koninklijke Nederlandse Chemische Vereniging, Postbus 90613, NL-2509 LP Den Haag, Netherlands.

Scandinavia,

Dr. Kurt Samuelsson, Acta Chemica Scandinavica, Wallingatan 26 A, S-111 24 Stockholm, Sweden.

South Africa

Dr. J. R. Bull, Head, Organic Chemistry Division, National Chemical Research Laboratory, P.O. Box 395, Pretoria 0001, South Africa.

UK

Dr. I. A. Williams, Royal Society of Chemistry, Burlington House, Piccadilly, London, W1V 0BN, UK.

USA

Dr. Marianne Brogan, Journals Department, American Chemical Society, 2540 Olentangy River Road, P.O. Box 3330, Columbus, OH 43210, USA.

Negotiations are in an advanced state for a number of other centres and we propose to announce these in later issues as the details are finalized.



Prof. Kjaer and Dr. Harnung at the Council meeting

PURE AND APPLIED CHEMISTRY

The contents list of the June, July and August issues of Vol. 55 (1983) of PAC were listed in *Chem. Int.*, 1983, No. 4, p. 29. Contents for the September–December issues are, or are expected to be:

Issue	Pages	Contents	Commission
No.9, September	1387–1461	Plenary lectures presented at IMEBORON V: Fifth International Symposium on Boron Chemistry, Swansea, UK, 11–15 July 1983	
		<i>Commission reports</i>	
	1463–1466	Extension of rules A-1.1 and A-2.5 concerning numerical terms used in organic chemical nomenclature (<i>Provisional</i>)	III.1
	1467–1476	Definition of pH scales, standard reference values, measurement of pH and related terminology (<i>Provisional</i>)	V.5 I.3
	1477–1528	Critical survey of stability constants of complexes of indium	V.6
No.10, October	1529–1581	Invited lectures presented at the 24th Microsymposium on Macromolecules 'Copolymers: Structure and Solution Properties', Prague, Czechoslovakia, 11–14 July 1983	
	1585–1668	Invited lectures presented at the 25th Microsymposium on Macromolecules 'Processing and Long-term Stabilities of Hydrocarbon Polymers', Prague, Czechoslovakia, 18–21 July 1983	
No.11, November		Plenary lectures presented at the 2nd International Symposium on Organometallic Chemistry directed toward Organic Synthesis, Dijon, France, 28 August–1 September 1983	
No.12, December		Plenary and Keynote lectures presented at the 9th International Symposium on Microchemical Techniques 'Microchemical Techniques and Trace Analysis', Amsterdam, Netherlands, 28 August–2 September 1983	
		<i>Commission reports</i>	
		Nomenclature, symbols and units recommended for <i>in situ</i> microanalysis (<i>Provisional</i>)	V.2
		Applications of ion-selective electrodes in nonaqueous and mixed solvents	V.5
		Recommended method for the gas chromatographic profile analysis of basic N-containing aromatic components (azaarenes) in high protein foods	VI.1

It can be seen that the splendid record of Commission output commented on last time could not be kept up, there being an abrupt pause in the flow after the September issue. Could this be an effect of the General Assembly, a drying up of ink supply or just a pause before the next wave? December indicates that it could be the last effect. On the other hand, the large number of Proceedings to be published from the Symposium Season might be using all the available space.

Algal toxins in seafood and drinking water

by Prof. P. Krogh
Commission VI.1

That certain fish and shellfish can be poisonous and cause death when eaten has been known since ancient times, but only within the last 50 years has the chemical nature and biological basis for these foodborne intoxications been elucidated. It is now evident that microscopic algae, present in phytoplankton, produce very potent toxins (phycotoxins or algal toxins) which are chemical compounds mainly of low relative molecular mass. Concentrations of phycotoxins in the sea or in fresh water are highest during algal blooms or red tides, a phenomenon characterized by a sudden rapid multiplication of algal cells caused by factors not yet fully elucidated. The phycotoxins are then taken up by predators feeding on plankton, either directly as in the case of bivalve molluscs, or through several trophic levels as in fish. These food items are then consumed by man.

Algal blooms, including those of toxic algae, have become a more frequent phenomenon throughout the world in the last decade or two, and pollution of the sea and freshwater is considered to be one of the factors involved. Another factor may be that surveillance and reporting systems have improved in recent years, resulting in the more efficient accumulation of information concerning algal blooms on a world-wide basis. As fish and shellfish constitute an important part of the world's food supply, and the main source of protein for certain communities, particularly in some developing countries, the apparently increasing presence of phycotoxins in these food resources and the possible involvement of human activities deserve appropriate attention.

The public health aspect of algal toxins and the interference of these toxins with international trade with seafood was realized by the IUPAC Food Chemistry Commission, who formed a working group on aquatic biotoxins several years ago to study these phenomena. Thus chemical procedures for analysis of seafood for one group of algal toxins (the PSP) is presently being studied, and the Commission has organized two international symposia within the last 4 years, covering algal toxins, as well as fungal toxins (mycotoxins). In the following the human diseases and the chemical and biological nature of the disease agents are reviewed.



Prof. Palle Krogh

PARALYTIC SHELLFISH POISONS (PSP)

PSP constitute a group of closely related derivatives of tetrahydropurine. Saxitoxin (mw:372) was the first discovered compound, and is the major PSP component in shellfish collected on the West coast of USA. On the East coast of USA and in Europe the gonyautoxins are dominant in the PSP complex. The PSP compounds are heat stable at acidic pH, but very unstable and easily oxidized under alkaline conditions.

The PSP are produced by single algal cells, called dinoflagellates, included in the genus *Gonyaulax* (*G. catenella*, *G. acatenella*, *G. tamarensis*, *G. excavata*, *G. polyedra*), species which occur ubiquitously.

The method of analysis for PSP most commonly used is a mouse assay, which is relatively easy to perform, but unspecific and not very sensitive. Because of these shortcomings attempts have been made to substitute the mouse assay by chemical procedures, the most promising being methods involving resin column clean-up and alkaline oxidation in order to obtain fluorescent purine derivatives of PSP, which are then measured spectrophotometrically.

Shellfish become contaminated by filter feeding on the mobile *Gonyaulax* cells as well as on resting cells of the dinoflagellates, which contain 10–1000 times higher PSP concentrations compared with the motile cells. In the shellfish (mussels, clams, scallops, oysters) the highest concentration is found in the digestive organs (e.g. stomach), but also other soft tissues contain PSP. Transmission of PSP from dinoflagellates through zooplankton to finfish has been reported, mainly in connection with death of fish (fish kills), especially herrings. It is at present unknown whether surviving fish from kills may contain sufficient PSP to constitute a health hazard for human consumers. Also mass deaths of sea birds have been encountered, associated with dinoflagellate blooms, and with fish acting as carriers (vectors) of PSP.

Saxitoxin, the only PSP component studied toxicologically and pharmacologically, affects excitable membranes by blocking the sodium influx through the membranes, at nanomolar concentrations. In mammals saxitoxin causes respiratory and circulatory failure through peripheral effect. In man the signs and symptoms of PSP intoxication are associated with peripheral paralysis, which may progress from a slight tingling and numbness about the lips to complete loss of strength in the muscles of the extremities and neck, and even to death through respiratory paralysis and cardiovascular collapse, usually within 2–12 h of consumption of the PSP-containing food. Estimates of the human dose resulting in death range from 500 µg to 12 400 µg, a variation that may be partly explained by the inadequate methods of analysis which have been employed. Cases of human intoxication associated with the consumption of shellfish, and supposed to be caused by PSP,

have been known for a long time, and up to 1970 about 1600 cases have been reported, mainly from Europe, Japan and North America. In the last decade, however, a changing pattern of PSP distribution has emerged, with cases also being reported from developing countries (Table 1). Whether this indicates a real increase in the number of annual PSP cases, or is the result of improved surveillance and reporting systems is not known. Data are available from the USA, comparing PSP with other agents of foodborne disease. In the period 1970–74, PSP cases constituted 5.4% of all cases of chemical foodborne disease. When infectious foodborne agents (bacteria, virus, parasites) were considered in addition to chemical agents in 1978, PSP cases made up 0.2% of all cases of foodborne disease with known cause.

CIGUATOXIN

The chemical structure of ciguatoxin is still largely unknown, but it appears to be a lipid containing a quarternary nitrogen atom, one or more hydroxyl groups and a cyclopentanone moiety. The toxin is produced by a dinoflagellate, *Gambierdiscus toxicus*, an organism identified in the Pacific as well as off the Florida coast. *G. toxicus* lives around coral reefs closely attached to macroalgae. Fish, such as parrotfish and surgeonfish, representatives of fish species likely to contain ciguatoxin, feed on the layers of microorganisms and detritus colonizing coral beds, thereby accumulating the toxin.

Methods of analysis used in monitoring fish for ciguatoxin include a number of bioassays, such as the mouse assay and assays based on the feeding of cats and mongoose; all tests are non-

Table 1. Recent reports on the occurrence of paralytic shellfish poisons

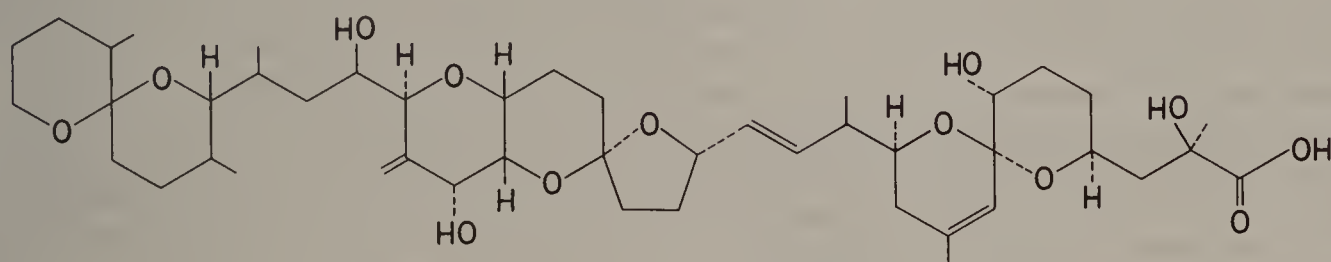
Country	Number of people affected	Number of deaths	Species of shellfish	Origin of shellfish	Concentration of PSP
Canada	2	0	Mussels	local	430 mg kg ⁻¹
Mexico	20	3	Mussels	local	
Norway	4	0	Mussels	local	400–40 000 µg ingested
Malaysia	201	4	Clams	local	
South Africa	6	2	Black mussels	local	
Venezuela	171	10	Mussels	local	790–33 000 µg kg ⁻¹
Western Europe (in 1976):	120	0	Mussels	Vigo (Spain)	12 000–40 000 µg kg ⁻¹
France, Italy, Spain, Switzerland & West Germany				..	
United Kingdom	78	0	Mussels	local	600–6000 µg ingested
USA (California)	51	1	Mussels	local	
India	98	1	Oysters		
			Mussels	local	

specific and only semiquantitative at best. Recently a radioimmunoassay for ciguatoxin has been developed.

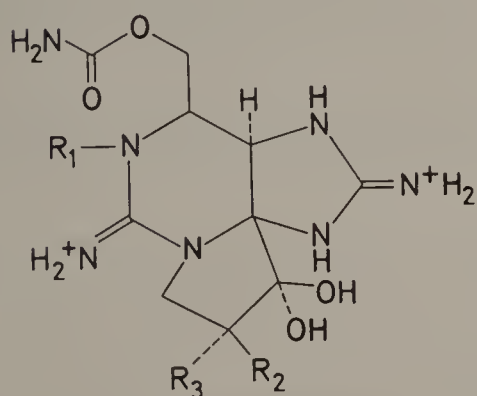
More than 400 species of bony fish have been reported to have caused ciguatoxin intoxication ("ciguatera"). In general, ciguatoxic species are limited to fish that feed on algae and the detritus of coral reefs, particularly the surgeonfish, parrotfish, and the larger reef carnivores, such as reef sharks, moray eels, snappers, tunas and barracuda, that prey on these herbivores. The highest concentrations of ciguatoxin have been found in the liver and other abdominal organs, and not all the fish in a single population contain equal levels of toxin.

Ciguatoxin has a direct effect on excitable membranes, resulting from the replacement of calcium by ciguatoxin at receptor sites which regulate steady-state sodium permeability, with ciguatoxin acting as a competitive inhibitor of calcium ions.

In man "ciguatera" is characterized by the onset of gastrointestinal symptoms, including abdominal cramps, nausea, vomiting and watery diarrhea. Initial symptoms may include numbness and unusual sensory responses (paraesthesia) of lips, tongue, and throat, and reversal of hot and cold temperature sensation. In more severe cases hypotension and respiratory paralysis occur, but cases of death are rare, if observed at all. Typically symptoms develop within 1-6 h, and the acute symptoms subside within a few days. However, weakness and sensory disturbances may persist for months. Cases of ciguatera are commonly encountered throughout the Caribbean area and much of the Pacific area. In addition, international trade, in particular with frozen fish, can result in human exposure in other parts of the world. In the USA, ciguatera accounted for 18.2% of all cases of chemical foodborne diseases in the period 1970-74, and 1.1% of all

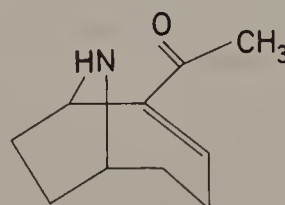


DINOPHYSIS TOXIN-1



PSP TOXINS

	<u>R₁</u>	<u>R₂</u>	<u>R₃</u>
Saxitoxin:	H	H	H
Neosaxitoxin:	OH	H	H
Gonyautoxin I:	OH	H	OSO ₃ ⁻
Gonyautoxin II:	H	H	OSO ₃ ⁻
Gonyautoxin III:	H	OSO ₃ ⁻	H
Gonyautoxin IV:	OH	OSO ₃ ⁻	H



ANATOXIN-A

Fig. 1. Chemical structure of selected phycotoxins — dinophysis toxin 1, anatoxin a, and the PSP toxins

foodborne diseases including microbially — as well as chemically — induced disease in 1978.

NEUROTOXIC SHELLFISH POISONS (NSP)

NSP intoxication in humans is a disease encountered around the coasts of Florida and associated with blooms of the dinoflagellate *Gymnodinium breve* (taxonomically the organism has recently been transferred to *Ptychodiscus brevis*). A number of toxic compounds has been isolated from *G. breve* cells. The molecular weights of the compounds range from 279 to 2538, and the compounds are lipid-soluble, non-aromatic and non-proteinaceous. A modified mouse bioassay has been developed as a method of analysis for shellfish. Fish kills and mass death of sea birds have been observed associated with blooms of *G. breve* off the West coast of Florida.

In humans, consuming shellfish contaminated with *G. breve* cells, paraesthesia, reversal of hot and cold temperature sensation, nausea, vomiting, diarrhea and discoordination of movement occur within 3 h. Paralysis has not been observed, and NSP appears to be milder than PSP, with no death reported so far. In USA in the period 1970–74 two outbreaks of NSP were recorded, both associated with consumption of clams, and including five cases. In addition to intoxication an upper respiratory syndrome of NSP has been reported, associated with aerosols of *G. breve* cells and/or toxins at coastal areas of Florida. The rapidly reversible syndrome is characterized by conjunctival irritation, copious nose bleeding and non-productive cough.

DIARRHEIC SHELLFISH POISONS (DSP)

DSP are derivatives of okadaic acid, a complex polyether derivative of C₃₈ fatty acid, produced by strains of several dinoflagellate species within the genera *Dinophysis* and *Prorocentrum*. A rat bioassay involving feeding and observation for diarrheal symptoms has been employed as a method of analysis for mussels. Intoxication in man by DSP is characterized by diarrhea, nausea, vomiting and abdominal pain. The onset of disease range from 30 min to a few hours after ingestion, and recovery occurs after 3 days; no deaths have been reported. In Japan 800 cases of DSP have been reported since 1976, and 30 cases were encountered in the DSP outbreak in the Netherlands in 1981.

TOXINS FROM CYANOPHYTES

Toxins from cyanophytes (blue-green algae) in freshwater constitute a problem different from

the above-mentioned marine phenomena, though also influenced by algal blooms and the factors creating blooms. In this case vectors are not known to be involved and the toxins or microscopic toxic cells may be transferred directly to the human organism through drinking water. Thus the growth of blue-green algae in freshwater reservoirs adds to the difficulties of providing pure drinking water.

Most of the available information on toxic freshwater cyanophytes is concerned with the following three species: *Microcystis aeruginosa*, *Anabaena flos-aquae* and *Aphanizomenon flos-aquae*. A number of toxic preparations have been isolated, consisting of peptides, carbohydrates and other compounds and with molecular weights ranging from 1300 to 19 400. In addition a few low molecular weight compounds have been isolated, thus saxitoxin produced by *Aphanizomenon flos-aquae*, and an alkaloid, anatoxin a, produced by *Anabaena flos-aquae*. Field cases of sudden death in domestic animals (mainly ruminants) due to ingestion of toxic cyanophytes from drinking water (ponds) have been reported from many parts of the world. A waterborne outbreak of gastrointestinal disease in humans occurred in Pennsylvania, USA, in 1975, affecting 62% of the population. Bacterial and viral agents could be excluded, and it was assumed that cyanophytes present in the uncovered drinking-water reservoir were the cause.

Further information may be obtained from: *Environmental Health Criteria Document for Aquatic (Marine and Freshwater) Biotoxins*, World Health Organization, Geneva, 1983 (in preparation). *The Water Environment: Algal Toxins and Health*, W. W. Carmichael (ed.), Plenum Press, New York and London, 1981. *Toxic Dinoflagellate Blooms*, D. L. Taylor and H. H. Seliger (eds.), Elsevier North Holland, New York, 1979. Dinoflagellate toxins, by Y. Shimizu. In: *Marine Natural Products*, P. J. Scheuer (ed.), Academic Press, New York, 1978, pp. 1–42.

International Newsletter on Chemical Education

Issue No. 19, July 1983, of the Newsletter, published by the IUPAC Committee on Teaching of Chemistry, is mainly concerned with the use of microcomputers in chemical education. There are articles by teachers from Australia, France, Japan, New Zealand, UK and USA. Other topics considered are a conference in GDR, the activities of Commission VII.3, a course on chemical equilibria and chemistry as part of general education.

OTHER PEOPLE'S PUBLICATIONS

International Council of Scientific Unions (ICSU)

ICSU Newsletter No. 14, June 1983. Report on the International Galileo Conference, March 1983. Report on the CTS Seminar, March 1983, to plan the CTS Conference, Bangalore, August 1985, on 'Science Education and Future Human Needs'. Report on the meeting of COGENE, June 1983. Article on the International Union of Biological Sciences (IUBS).

European Photochemistry Association (EPA)

EPA Newsletter, February 1983. Articles on Photochemistry in India; Photochemistry and Beer. Conference reports on Bordeaux and Toulouse Interuniversity Seminar, March 1982; 2nd Meeting of the Swiss Section of the EPA, June 1982; Deconvolution and Reconvolution of Analytical Signals, Application to Fluorescence Spectroscopy, July 1982; 8th International Farbensymposium, September 1982; 5-University-Photochemistry-Minisympodium, November 1982. Relevant meetings 1983 and 1984. List of new books on photochemistry and related subjects.

EPA Newsletter, June 1983. Articles on Photochemistry in Dutch Universities; Photochemical activities of the Radiation Chemistry Data Center, University of Notre Dame, USA; Italian Summer School; Journal of Photochemistry. Conference on Polymer Photochemistry, June 1983. Lists of new books on photochemistry and related subjects and of theses in photochemistry. News from various relevant national groups. Announcements of meetings 1983 and 1984.

International Association for Cereal Chemistry (ICC)

ICC Newsletter No. 01/July 1983. Introductory articles by the Association's President and Secretary General; Report by the Technical Director on some Working Groups, laying particular emphasis on statistical planning and analysis of collaborative tests. Programme of the 11th ICC Congress, Vienna, 6-8 June 1984.

Groupeement pour l'Avancement des Methodes Spectroscopiques et Physicochimiques d'Analyse (GAMS)

GAMS Information Bulletin No. 78, March-April 1983. Programmes of meetings for April and May 1983; preliminary details of 35th GAMS Congress and 3rd Congress on Analytical Chemistry, December 1983.

GAMS Information Bulletin No. 79, May-June 1983. Report of the 3rd Mass Spectrometry Congress, 5-8 April 1983; announcement of a meeting of the Commission on Mass Spectrometry, Paris, 10-11 October 1983; further details of the 35th GAMS Congress and 3rd Congress on Analytical Chemistry, Paris, December 1983, including a list of plenary lectures.

GAMS Information Bulletin No. 80, July-August 1983. Composition of Council and Bureau. Report on a meeting of the Commission on Atomic Spectroscopy, March 1983. Announcements of Commission and Regional Group meetings, October-November 1983. Timetable of 35th GAMS Congress and 3rd Congress on Analytical Chemistry, December 1983.

International Federation of Clinical Chemistry (IFCC)

IFCC News No. 33, 1983/1. IFCC finances; the Expert Panel on the Theory of Reference Values; Corporate Affiliate news; Expert Panel news; programme of meetings.

LETTERS TO THE EDITOR

I want to draw your attention to the terminology of polymers because I think this is a task IUPAC should take over and try to clear up the situation.

Polymers are today the main constituents of many different technical and chemical products and all those using these products need names for them, need abbreviations for the names, etc. Very often so-called "trivial names" are used. These names are not good and do not fit into a common system for polymer terminology, but on the other hand they are not so bad as using systematic names belonging to many different systems.

IUPAC was busy in this direction and published in 1974 the

Basic Definitions of Terms relating to Polymers, Nomenclature of Regular Single-Strand Organic Polymers, Abbreviations (Symbols) for Synthetic Polymers.

The work on nomenclature of copolymers is going on in the IUPAC Commission IV.1. The published rules are somewhat complicated, but they are suitable for finding a name for a special polymer. Difficulties arise in two points: The IUPAC rules are not sufficient for polymers in technical application because there are too many technically used polymer materials, and secondly IUPAC gives a list of only 17 Abbreviations or Symbols. The users of polymers in industry, commerce, building work, medicine, etc. need more Symbols, therefore they invent their own,

with the result that the rubber-chemist and the textile chemist invent different Symbols for the same polymer. Not only are the Symbols different, very often the whole system for the nomenclature of technically used polymers varies from one application to another. For example, rubber terminologists rely with their system mainly on the methylene-group. The Symbol M means therefore a rubber with a saturated chain of the polymethylene type. Consequently M is included in many Symbols for synthetic rubbers. The plastics terminologists' system does not accept polymethylene as the basic chain. Their names are built mainly by addition of the names of the components, and the Symbols by addition of the first letters of the names of these constituents. The textile terminologists have not yet agreed on a special system but they have decided to reject both the rubber system and the plastics system.

In the International Organization for Standardization (ISO) different "Technical Committees" are existing for various materials; these Committees have standardized their own systems and so we have today for these materials different nomenclatures, not only for rubber, plastics and synthetic fibres but also for polymers used as implants in medicine, for polymers used by mechanical or electrical engineers and for those used in the building industry.

At least among the chemists all over the world IUPAC is until now that organization which is felt to be competent to clear up the situation in this field and to create a common nomenclature for all polymers. If IUPAC is not able to take the initiative and give clear recommendations for solving these problems, many people would lose their confidence in IUPAC as an authority for nomenclature questions. I hope the readers of *Chemistry International* and especially our colleagues in Commission IV.1, will recognize the problem and will set to work on it.

H. Feurberg

some 20 samples coefficients of variation between 4.0 and 13.6% were found in case of the reference solution and between 10.4 and 25.4% in case of the spiked sample.

This report by Commission VI.1 is expected to be published in *Pure & Applied Chemistry* in November or December 1983.

Applications of ion-selective electrodes in non-aqueous and mixed solvents

A survey of the possibilities and problems of the application of ion-selective electrodes in non-aqueous solvents is presented. The possible ways of calibrating the sensors in non-aqueous media are treated with reference to the theoretical problems involved. Potential response and changes in the response of different types of electrodes in various solvents are dealt with. A separate section is devoted to applications in chemical analysis and basic research.

In accordance with the material available in the literature, applications of glass membrane electrodes comprise a considerable part of the report but applications of non-glass electrodes are summarized. For ease of reference, ion-selective electrode applications in non-aqueous solvents are summarized in 19 tables. The report contains 330 references.

This Commission V.5 technical report is scheduled for publication in *Pure & Applied Chemistry*, late 1983 or early 1984.

KWIC Index of international standards

The International Organization for Standardization (ISO) has recently issued a comprehensive index of international standards. As explained in ISO Bulletin, Vol. 14, No. 6, June 1983, the KWIC Index lists the titles, in English, of nearly 7500 international standards and standards-type documents published by 24 international organizations. The Index is far more than a record of international standards — it is a working tool which allows instant location of any title. Each significant word in the title of each document is taken as a key-word and the alphabetical listing of these key-words gives access to the Index. KWIC means 'Key-Word-in-Context' because each entry displays not only the key-word but the title text around it. The rest of the entry gives the reference to the organization responsible for the document and the identifier number. The Index is available from the ISO Central Secretariat, Case postale 56, CH-1211 Genève 20, Switzerland, price CHF 285, or from national standardization bodies, listed in the Bulletin, which act as sales agents for ISO publications.

Recommended method for the gas chromatographic profile analysis of basic N-containing aromatic components (azaarenes) in high protein foods

Results are reported of a collaborative study on the determination of basic nitrogen-containing aromatic compounds (azaarenes) in high protein foods. To this end reference solutions (containing benz(e)acridine, 8,10-dimethylbenz(a)acridine, 10-azabenz(o)pyrene, dibenz(c,h)-, -(a,h)-, and -(a,j)-acridine) and spiked ham samples [containing the same compounds except 8,10-dimethylbenz(a)acridine] were analysed. From

Congratulations to:

Prof. T. Fujinaga (Division V Committee) on the award of the tenth Talanta Medal for his outstanding contributions to analytical (especially electroanalytical) chemistry and his ability in organizing national and international meetings in the field. He has been associated with IUPAC for over 20 years.

Dr. K. V. Sane (Indian National Representative, CTC) on the award of the Commonwealth Foundation Senior Visiting Practitioner Award for 1983. This is the first time this prestigious award has been made and it is in recognition of his work with IUPAC on low-cost equipment for laboratory teaching.

Prof. C. N. R. Rao (Bureau 1977 —, CTC 1971–1981, Commission I.5 1971–1983, IUPAC Vice-President 1983 —) on the award of the first Jawaharlal Nehru Visiting Professorship, which he will take up from November 1983 in the Physical Chemistry Department of University of Cambridge, UK.



Prof. T. Fujinaga is presented with the tenth Talanta Medal by Dr. M. Williams



Prof. C. N. R. Rao, the new IUPAC Vice-President

We regret to record the death of:

Prof. H. Breuer, FRG (20 August 1982) — Division VII Committee (1972–1979, 1981 —).

Prof. S. Mizushima, Japan (3 August 1983) — Bureau (1955–1961).

His photograph appeared in *Chem. Int.*, 1983, No. 4, p. 34.

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

CHEMRAWN Committee:

Lynby, Denmark, 19 August 1983

1. Dr. Rossiter welcomed members and observers to the meeting.

2. Dr. Egan said that each CHEMRAWN meeting would in future be treated by IUPAC as an individual project in a manner similar to all other projects in the current IUPAC programme. Each project would thus be handled on an individual programme revision sheet for critical assessment by the Vice-President of the Union. These sheets were now available and he proposed to complete them in consultation with the meeting co-ordinator and Dr. Rossiter at the conclusion of the Committee meeting for transmission to the IUPAC Secretariat.

3. Dr. Rossiter reported that, at his meeting with ICSU officers in Stockholm on 24 January 1983, it had been agreed that ICSU itself should not be directly involved in organizing SCIRAWN meetings. However, it strongly encouraged the further development of CHEMRAWN meetings and suggested that one (at least) of these could be developed jointly with one or more other ICSU Unions, not necessarily with IUPAC taking a leading role. In the light of this, he had discussed proposals for CHEMRAWN V with officers of the International Union of Biochemistry (IUB).

4. Dr. Rossiter said that he had prepared a summary account of the CHEMRAWN II meeting which could be sent to Committee members and referred to the many complimentary accounts which had appeared in the technical press, some of which had also received a wide distribution outside normal scientific circles. The Proceedings of the Conference had recently been published by Pergamon Press and a Recommendations and Perspectives volume was being prepared for publication in the Philippines. A summary, with the recommendations, had also been sent to CASAFA.

5. It was agreed that the recommendation of the Conference Future Actions Committee, that IUPAC should continue the CHEMRAWN II initiative, convening conferences in the future on a regular basis to assess progress, needs and priorities, should be recommended to the IUPAC Executive Committee perhaps initially with a follow-up conference in 1989 or 1990.

6. Dr. Rossiter also presented a provisional summary financial statement which indicated a possible favorable balance of between US\$ 20 000 and US\$ 45 000, depending on the receipt of funds still outstanding.

7. Dr. Rossiter referred to the arrangements being made for CHEMRAWN III (The Hague, 25–29 June 1984), the title of which had been modified to “World Conference in Resource Material Conversion: Chemical Process Bridges to Future Needs”.

Prof. Beck said that he had received about 200 responses to the first circular and provided proof copies of the second circular, which would be available shortly. He provided a detailed draft programme, most of the speakers in which had accepted invitations, together with publicity plans for 600 participants and a budget of approximately US\$ 250 000 and proposals for funding this.

8. Dr. Gardner expressed the interest of CTC in both CHEMRAWN III and CHEMRAWN IV and the willingness of the Committee to help in developing this aspect of the meetings.

9. Dr. Rossiter referred to the arrangements being made for CHEMRAWN IV (Woods Hole, MA, 22–28 September 1985) under the title “Chemistry and Resources of the Global Ocean”. Prof. Overberger said that a full programme was being developed and that a first circular would be available later in the year. A moderate budget, at present of the order of US\$ 83 000, was being drawn up and it was intended to appoint a Future Action Committee.

10. Dr. Rossiter referred to earlier SCIRAWN discussions with ICSU and IUB and said that several other major developments in the proposals for a meeting as “The Molecular Basis of Carcinogenesis” had occurred. In particular, the Federal German Republic National Committee for Chemistry had offered to host a meeting on “Chemistry and Health” or some similar subject, not earlier than 1986. It was agreed that this provided scope for dealing with both the original subject and three or four other carefully chosen areas and provided a good basis for further discussions. It was therefore agreed to accept the offer and to request more detailed proposals, possibly with the title “Contributions of Chemistry to Human Health: the New Frontiers”.

11. Dr. Rossiter repeated that the Federal German Republic National Committee for Chemistry had now withdrawn its earlier offer to host a CHEMRAWN meeting on “Water and Waste Water Technology” in favour of a meeting on “Chemistry and Health”. This offer was accepted (see above) and the designation “CHEMRAWN VI” provisionally transferred to proposals for a meeting in Japan in 1987.

12. Dr. Uchida said that in further discussions the Japanese Committee for CHEMRAWN had concluded that the subject of shelter was too narrow as

the basis for a CHEMRAWN meeting and had developed alternative proposals for a meeting in "Special Materials to Meet New Needs" in Japan in 1987. This would relate to advanced materials directed at meeting global limitations to growth, functional materials leading to innovation in electronics and communication technology, and to a more sophisticated lifestyle and industry. The Committee expressed pleasure with the proposal, which was accepted with a recommendation that the programme should be developed with a strong futuristic bias and focusing particularly on energy, transportation and communication.

13. Dr. Rossiter referred to Dr. Sidhu's inability to attend the present meeting: it was agreed to request further information on his earlier proposals for a symposium on "Future Sources of Inorganic Raw Materials" at the next meeting of the Committee.

14. Dr. Rossiter said that he, together with Dr. Egan, Prof. Overberger and Prof. Zaikov were due to retire from the Committee in 1984, after eight years' service, and were ineligible for re-appointment except with special approval of the Bureau.

15. Dr. Egan said that expenditure from the general CHEMRAWN fund had related only to members' travel and subsistence and presented a simple account of this which showed a balance of US\$ 222.00 as of 21 July 1983.

16. Dr. Rossiter explained the Executive Committee's new proposals for funding the CHEMRAWN committee based on a "rolling fund" related to any surplus funds arising from CHEMRAWN Conferences. Certain funds previously allocated to CHEMRAWN II had now been withheld from recent grants. This was embarrassing since other organizations had donated matching funds and had agreed to waive any claim on CHEMRAWN II surplus, provided the money concerned was used for CHEMRAWN purposes. The Committee regarded this action as a breach of faith and resolved to request the return to CHEMRAWN accounts of the funds concerned.

17. It was agreed that the next meeting of the Committee should be held in the Hague on 30 June 1984, immediately following the meetings of CHEMRAWN III.

H. Egan

***Chemistry International* Editorial**

Advisory Board: Lyngby, Denmark,
19 August 1983

Introductory remarks

The Secretary General said that it was very important critically to assess the experimental change in emphasis of the contents of *Chemistry International* (CI) started in 1983. The future of the magazine was linked to the outcome of the proposals for the Affiliate Membership Scheme but the Board should proceed as if CI was to continue and be improved. It might, however, consider what alternatives were available to inform chemists at large of IUPAC work and be prepared for them.

Confirmation of membership

The Board considered that the representation as

listed in *Chem. Int.*, 1983, No. 4, p. 35 was adequate.

Terms of Reference

The draft of Standing Orders given in the Appendix was agreed and would be submitted to the Executive Committee for approval. There was no conflict with the Terms of Reference of the Committee on Publications.

Editor's report and assessment of content

The Editor stressed that he was unable, in the time available, to do more than produce the current style of CI. Improvements in the appeal of the contents must depend on material supplied to him from IUPAC bodies. It was suggested that the layout and illustrations were not of adequate quality, a point that should be taken up with the publisher. On the other hand, the opinion was given that if improvements in presentation would result in higher costs it was not worthwhile as the publication now contained the correct material for the IUPAC news magazine. The question of attracting advertising revenue was raised but it was noted that this could cause difficulties in world-wide distribution even if advertisers could be found.

Future content

The Board passed unanimously a recommendation that CI should continue to concentrate on IUPAC and IUPAC-related material. In order not only to make the contents more interesting reading but also to spread knowledge of IUPAC, IUPAC bodies should be encouraged to write articles explaining the reasons for their work, the way it is done, including problems and compromises, and its importance to the chemical community as well as to the general public. It was also proposed that Commissions producing Commission Newsletters, or planning to do so, should consider whether use of CI as their news medium would serve their purpose just as adequately. Bodies already producing Newsletters should anyway be encouraged to inform the Editor, in advance, of the contents list and how copies could be obtained by interested parties outside their normal distribution, as well as recommending which parts could most usefully be reproduced in CI. It was suggested that more humour might be introduced but it was pointed out that this was very difficult in an international magazine. It was, however, agreed unanimously that every effort should be made to try to attain a less "dry" presentation.

Board members

As had been anticipated, one member of the Board would end his Division Membership at this General Assembly and he asked about the procedure for his replacement. It was pointed out that his Division President should recommend a replacement to the Executive Committee for approval by the President.

Date of next meeting

The next normal meeting of the Board would be at the 33rd General Assembly, Lyon, 1985. It was agreed, however, that an extraordinary meeting might be necessary in 1984 to review progress. Financial provision should be requested for such a meeting but a decision on its necessity must await a report from the Editor in six months' time.

R. W. Fennell

Draft — STANDING ORDERS FROM
EXECUTIVE COMMITTEE

CHEMISTRY INTERNATIONAL EDITORIAL
ADVISORY BOARD

Composition and Terms of Office

- (i) There shall be an Editorial Advisory Board for the IUPAC news magazine.
- (ii) The Board shall consist of the Secretary General (Chairman), the Chairman of the Committee on Publications, one representative from each of the Divisions and from the CHEMRAWN Committee, COCI, CTC, IDCNS, and the CI Editor (Secretary).
- (iii) The representatives shall be nominated biennially by the President or Chairman of the relevant IUPAC bodies and appointed by the President of the Union in consultation with the Executive Committee.

Terms of Reference

- (i) To review the editorial policy and contents of *Chemistry International* (CI) at a General Assembly.
- (ii) To advise the Editor, upon request, on articles to appear in CI.
- (iii) To discuss future contents and format.
- (iv) To ensure that IUPAC bodies provide the Editor, spontaneously or on request, with material on their work and future programmes.

lunch facilities on the second day and other refreshment throughout the meeting. Dr. Horwitz said that AOAC would offer a reception on the first evening.

Dr. Egan said that a questionnaire regarding validation protocols had been sent to several international organizations. About 20 of these had been returned so far and would be analysed by Dr. Horwitz, who would present the results at the symposium. Dr. Egan circulated a programme outline. This was discussed and a revised programme, to which a few additional contributions might be added later, agreed. It was also agreed that the speakers concerned should be formally invited, normally on a non-funded basis.

Dr. Egan and Dr. Horwitz agreed to prepare a first circular on the basis of the above programme, with a registration fee of US \$35–50 based on a draft budget circulated by Dr. Horwitz, to the funds of which both AOAC and the three IUPAC Divisions would contribute. Other publicity arrangements were also discussed and Dr. Egan agreed to initiate these with an article for *Chemistry International*. Pergamon Press had agreed to waive prior publication rights: AOAC would consider publication proposals nearer the time of the symposium but no specific arrangements were in mind at present other than follow-up discussions at a Spring Workshop to be held in New Orleans in 1985. It was agreed that no further meeting of the Joint Committee would be needed.

H. Egan

Centennial Joint Subcommittee on
Harmonization: Lyngby, Denmark,
20 August 1983

Dr. Egan said that the symposium would be treated for IUPAC programme purposes as a project and circulated his proposals for the completion of a Current Programmes Revision Sheet 1983. These were discussed and it was agreed that the following objectives should be indicated:

To identify the design essential for the validation of the performance of analytical methods; to identify, where possible, the minimum criteria for an interlaboratory study for validation in the light of the above, and to compare the above design factors and criteria, as identified by various competent international organizations, with the view to their harmonization on an international basis.

Dr. Horwitz said that the final first draft of the AOAC protocol for the validation of the performance of an analytical method had now been published (*J. Assoc. Offic. Anal. Chem.*, 1983, **66**, 455).

Dr. Egan reported that President Prof. S. Nagakura had approved IUPAC sponsorship of the meeting and that the US National Committee had agreed to co-sponsor the meeting. Arrangements had been made to hold the meeting at the National Academy of Sciences in Washington and included

Organic Chemistry Division Committee:
Lyngby, Denmark, 20, 21 and 23 August 1983

1. The minutes of the meeting at Leuven, Belgium, on 25, 29 and 30 August 1981, were approved.

2. The reports of the Division President to the Council and his actions taken after the Leuven General Assembly were approved.

3. The reports of Commissions III.1, III.2 and III.3 were approved.

4. The organization by the Division President of a new Study Group on Medicinal Chemistry, comprising Drs. Brossi and Bartman and Profs. S. Sarel and C. G. Wermuth, was approved.

5. The following composition of Commissions was approved:

	Titular	Associate	National Reps.
III.1	8	11	10
III.2	7	8	7
III.3	6	7	5
III.4	Suspended (see 4 above)		

6. **Sponsorship and organization of symposia.** The following applications for scheduled symposia have been approved during recent years:

Natural Products: XIV Poznan, Poland, 1984;
XV The Hague, Netherlands, 1986.

Physical Organic Chemistry: Auckland, New Zealand, 1984; Tokyo, Japan, 1986.

Organic Synthesis: Freiburg, FRG, 1984.

Photochemistry: Interlaken, Switzerland, 1984.

Organometallic Chemistry directed toward Organic Synthesis: Kyoto, Japan, 1985.

Novel Aromatic Compounds: St. Andrews, UK, 1985.

Organosilicon Chemistry: Kyoto, Japan, 1984.

Preliminary plans for several other symposia were reviewed.

7. **Budget**: The Division's budget for 1982-1983 was reviewed. Commission Chairmen were asked to submit proposals for 1984-1985 promptly.

8. **Officers and Membership for 1983-1985**. J. Mathieu, Past-President; G. Modena, President; J. F. Bunnett, Vice President/President-Elect; Sukh Dev, Secretary. New Members: Michinori Oki (Japan); Roberto A. Rossi (Argentina). Retiring Member: C. W. Rees (UK). New Co-opted Members: John T. Marvel (USA); K. Schaffner (FRG). Retiring Co-opted Members: D. M. Brouwer (Netherlands); H. Tanida (Japan).

9. **Current issues**. *Chemistry International* and the proposed IUPAC Affiliate Scheme were discussed. There was consensus that CI should be maintained. No consensus on the Affiliate Scheme was reached.

10. **Appointments** by the President of Divisional representatives to various posts and responsibilities within IUPAC were reported and approved.

11. **Congress programs**. There was consensus of concern that the Organic Chemistry Division has no opportunity under current practices to review, at the planning stage, organic chemistry programs for IUPAC Congresses.

12. **Next meeting**: Lyon, France, during the 33rd IUPAC General Assembly, 30 August-7 September 1985.

J. F. Bunnett

Commission I.3 — Electrochemistry:

Lyngby, Denmark, 19-22 August 1983

Comments on published reports were discussed, namely *Recommendations on reporting electrode potentials in non-aqueous solution* (G. Gritzner and J. Köta), *Nomenclature for adsorption at electrified interphases* (S. Trasatti and R. Parsons) and *Definitions on the pH scale* (A. K. Covington).

It was reported that the book on *Oxidation-Reduction Potentials in Aqueous Solutions* (A. Bard and R. Parsons) will be published soon. The Subcommittee of Solid Solubilities and Commission V.5 asked for information contained in the book prior to publication.

The first drafts of *Terminology in semi-conductor electrochemistry* (R. Memming, A. Bard and B. Miller), *Absolute electrode potentials* (S. Trasatti) and *Interfacial ion transfer* (K. E. Heusler) were

discussed. It was recommended that revised versions should be circulated among the members of the Commission. If serious objections are not raised the revised versions should be forwarded to Commission I.1 for further consideration.

A joint meeting was held with Commission I.6 in which a contribution to the project "Chemical Physics of Surfaces" on "Electrochemical Characterization of Surface Films" was approved. Dr. Justice was asked to complete his Introduction to Conductance Data Compilation with information on structure and use of the Data Bank. The report on *Recommendations for analysis of conductance data* (J. C. Justice) was presented. It was decided that any comments should be sent within three months. If no serious objections arise the report will be forwarded to Commission I.1.

In a joint meeting with Commission V.5 it was decided that Dr. Justice and Prof. Marcus cooperate on *Recommendations on extrapolation procedure for standard potential in non-aqueous solution* and Dr. Kadish and Dr. K. Niki on *Reference systems for heterogeneous charge transfer reaction rates*. Commission I.3 recommended Commission V.5 not to change the definition of "polarography".

The current program of Commission I.3 was revised. Project Nos 2/81, 4/81, 5/81, 6/81, 9/81, 13/83 and 14/83 should be continued without any changes of title or contributors.

Under the general heading "Fundamentals of Energy Conversion" No.1 is 14/83 and No.2, 8/81 "Semiconductor Electrodes". Project 11/83 will be coordinated by K. Niki, A. Yamada and J. A. Plambeck, and project 16/83 by Heusler, Landolf and Trasatti. Projects 7/81 and 12/83 are completed as far as the Commission is concerned. Project 15/83 is discontinued until a feasibility study was completed. New projects on "Terminology for microelectronic ion-sensitive devices in electrochemistry" by Covington and Memming, and on "Electrode potentials in non-aqueous solutions" by Gritzner were recommended. Some further projects to be initiated in the future were also discussed. Dr. Justice will cooperate with Prof. Marcus in a new joint project on "Extrapolation procedure for standard electrode potentials in non-aqueous solutions" initiated by Commission V.5.

Four new Titular Members were elected and several Associate Members. Dr. Trasatti was elected as new Chairman for 1984-1985 and Dr. Niki as new Secretary. The formation of a Subcommittee on Bioelectrochemistry was not recommended, but work in this field will be activated with the expertise of the newly elected members.

Commission I.4 — Physicochemical Measurements and Standards: Lyngby, Denmark, 1983

1. Future of the Commission

After a meeting with the Divisional President and Divisional Vice-President and in light of the reports by Dr. Lide and Dr. Schneider, the Commission accepted with some reluctance that it should cease to

exist as a separate Commission. The increasing importance of reference materials for physicochemical measurements in industry and elsewhere made it essential for there to be a focus within IUPAC for consideration of this subject. Redistribution of the present activities amongst other Divisional Commissions was considered inappropriate, and it was recommended that the Commission should be reconstituted as a Subcommittee of the Division and will report directly to the Division Committee with the following remit:

- (a) to complete the book *Recommended Reference Materials for the Realization of Physicochemical Properties*;
- (b) to comment on behalf of IUPAC on the recommendations of other international bodies (ISO, BIPM, OIML, etc.) regarding reference materials and techniques used for physicochemical measurements;
- (c) to liaise with other IUPAC Commissions on all matters concerning the need for reference materials on Physicochemical Measurements and Standards.

An initial membership of twelve is proposed. This number would be reduced after objective (a) has been accomplished.

2. Precision and Accuracy

The paper on Precision and Accuracy had been declined for publication in the proceedings of the Helsinki Conference on Harmonization of Analytical Studies. BIPM reported adversely on the manuscript. The Commission agreed not to pursue the matter further in view of the considerable activity within both IUPAC and BIPM. The annotated bibliography has been published after inclusion of additional references from the Analytical, Applied, and Clinical Chemistry Divisions.

3. Reference Materials for the Realization of Physicochemical Properties

Substantial progress has been made towards the publication of a book of this title which would contain new and updated recommendations on reference materials for physicochemical measurements, and documents had been received from the collators of all 17 sections. The sections on testing distillation columns, relative molecular mass, electrical conductivity, permittivity, optical refraction, PVT properties, and reflectance are virtually complete except for editing; those on enthalpy, surface tension, density, thermal conductivity, viscosity and optical rotation required slight modifications or additional material in the light of the Commission's deliberation. Significant work was still needed on humidity, temperature, wavelengths and transmittance, and potentiometric ion activities. The introductions to the sections include accounts of experimental methods where the nature of the subject permitted a precise summary to be made. A consistent editorial policy was adopted after a detailed discussion of the enthalpy section. It was agreed that completion of writing, editing, and submission to national standardizing laboratories for comment would be completed within the next 12 months and it was proposed to hold a meeting of

some members of the future Subcommittee in October 1984 to consider final editing matters.

4. Reports

Reports were received on the work of several international bodies. The forthcoming publication of "Supplementary Information" by the Consultative Committee on Thermometry (CCT) will include experimental procedures for the realization of the fixed points of IPTS-68 and EPT-76 (0.5–30K) and details of the relation between these two scales. Revision of IPTS-68 was still a long way off. Work on the density of water at three national laboratories was reported. Attempts to establish contact with OECD had so far failed, but would be renewed in the hope that that body would seek IUPAC's opinion before any further test guidelines for physicochemical properties were published.

A. J. Head

Commission I.6 — Colloid and Surface Chemistry including Catalysis: Lyngby, Denmark, 18–22 August 1983

A. Current state of running projects*

1. *Reporting Physisorption Data for Gas/Solid Systems*

The provisional document prepared by K. S. W. Sing (PAC, November 1982) is now in its final form.

2. *Reporting Experimental Pressure–Area Data with Film Balances*

The provisional document prepared by L. Terminassian-Saraga (PAC, November 1982) will be finalized by her. Only minor comments have been made.

3. *Terminology and Symbols of Light Scattering*

The provisional document prepared by M. Kerker and I. Kratochvil (PAC, May 1983) is open for comments. Finalization by correspondence.

4. *Reporting Data on Adsorption from Solution at the Solid/Solution Interface*

The draft prepared by D. H. Everett is now, after having been thoroughly discussed and revised during the meeting, practically into its final form.

5. *A Lexicon of Experimental Techniques in Surface Chemical Physics* (R. S. Hansen *et al.*)

A first draft has been revised during the meeting. Some extension will be made. Provisional report by correspondence. Finalization in Lyon.

B. Activities of Subcommittees (SC) and other activities

1. The SC on Physisorption (see A.1) has completed its activity.

2. The SC on Surface Chemical Physics (see A.5) will continue. Composition: R. S. Hansen, M. W. Roberts, J. Haber, K. Tamaru, J. Block, P. Gravelle, K. E. Heusler and K. Meyer.

3. The SC on Catalysis (see A.6) will continue. Chairman J. Haber.

*Titles given in IUPAC *Current Programmes* 1983 have been slightly changed.

4. Liaison with ISO TC/91 will be through P. Stenius.

C. Elections (new composition of I.6)

Titular Members

Chairman:	K. S. W. Sing
Vice-Chairman:	J. Haber
Secretary:	E. Wolfram
	P. Stenius
	J. Block
	L. Ter-Minassian-Saraga

Associate Members

N. V. Churaev	A. Maroto
P. Gravelle	J. Rouquerol
R. J. Hunter	J. Hightower
P. Wells	

National Representatives

S. G. Mason (Canada)	K. Meyer (GDR)
D. H. Everett (UK)	J. A. Pajares (Spain)
A. S. Kertes (Israel)	L. Ionesco (Brazil)
L. G. Nagy (Hungary)	A. Weiss (FRG)
G. F. Froment (Belgium)	J. C. Kuriacose (India)
A. Kitahara (Japan)	

E. Wolfram

Commission II.2 — Nomenclature of Inorganic Chemistry: Copenhagen, 11-16 August 1983

1. Membership changes

Prof. Jeannin and Dr. Leigh were elected for renomination as Titular Members until 1985 to allow them to complete their assignments as Division Chairman and overall editor of the Red Book revision, respectively. Prof. Busch (Vice Chairman), Dr. Coyle (Secretary), Prof. Huck, Dr. Fodor-Csányi and Prof. Reedijk were elected for renomination as Titular Members until 1987. Dr. Buschbeck was elected for renomination as an Associate Member until 1985, to permit completion of his current task on inorganic ring nomenclature. Mr. Godly, Dr. Laitinen and Mr. Sloan were elected for renomination as Associate Members until 1987. Dr. de Bolster was elected for nomination as an Associate Member until 1987. The terms of Dr. Bokij and Prof. Romao Dias as Associate Members end in 1983.

2. Current programme of the Commission

The Commission is giving highest priority to its ongoing revision of the inorganic nomenclature rules and to the preparation of Part I of the new Red Book, which will summarize basic aspects of inorganic nomenclature. Concurrently, work is continuing on a few longer-term projects leading to detailed documents on specialized subjects, which will be compiled as Part II of the Red Book.

3. Red Book revision (Part I)

The meeting of the Commission resulted in substantial progress towards completion of the new volume.

New drafts of most of the 10 chapters were reviewed. Three of these, dealing with naming of the elements, formulae, and the names of ions, radicals and salts, are substantially in final edited form. These, and at least two other chapters, are expected to be ready for submission in 1984.

A new document on nomenclature of non-stoichiometric solid-state phases (Revised Red Book, chapter VI) was reviewed by the Commission. This document is the result of extensive efforts over the past years by a joint working party of this Commission and Commission II.3, chaired by Prof. M. Sienko.

4. Specialized nomenclature topics (Red Book, Part II)

The final version of rules for *Nomenclature of Hydrides of Nitrogen and Derived Cations, Anions and Liquids*, which will form chapter 2 of Part II of the new Red Book, was published during 1983. Chapter 3, *Nomenclature of Polyanions* is undergoing final review and preparation for submission to IDCNS. The document on Inorganic and Coordination Polymers, published jointly with the Commission on Macromolecular Nomenclature as provisional recommendations in 1981, will, after slight modifications reflecting comments received, form chapter 4 of Part II.

T. D. Coyle

Commission II.3 — High Temperature and Solid State Chemistry: Lyngby, Denmark, 19-22 August 1983

Since Karlsruhe, one paper on zirconia-based electrolytes has been submitted to the Division for publication in PAC. Three issues of *High Temperatures-High Pressures* were devoted to papers given at the Harwell meeting. The *Bibliography* has been published on schedule. Papers on the melting points of refractory oxides, on characterization of Si_3N_4 powders, on nomenclature of nonstoichiometric compounds, and on terminology of carbon should be submitted to PAC before the Vienna meeting. A list of publications is given in the extended minutes.

Meetings

A highly successful meeting, "Zirconia-83", was held in Stuttgart on 21-23 June 1983. Petzow reported an unexpectedly high attendance of 380 people. Plenary lectures will be published in PAC, and the other papers, all of which were presented in poster sessions, will be published in a special issue of *Advances in Ceramics*. Final plans submitted by Rosenblatt for the 4th International Conference on High Temperature and Energy Related Materials, to be held in Santa Fe, New Mexico, USA, 2-6 April 1984, were approved. A possible fifth one in South Africa was suggested. A list of meetings is given in the extended minutes.

Current projects

Thermodynamic and Transport Properties of Alkali Metals (TF-1). The purpose of this project is to publish a critical compilation of the structural, metal thermodynamic and transport properties of alkali metals. It is to be published by Pergamon Press, probably in two volumes, containing 66 chapters in 9 sections, some 1400–1500 pages by 80 authors.

Ohse reported that all but eight chapters are in hand and that all should be ready by early spring 1984 for submission. One of the chapters will be published separately in PAC. A negotiation session involving Commission Members, IUPAC publication officials, and Pergamon representatives occurred.

The Bibliography on the High Temperature Chemistry and Physics of Materials (TF-2). The purpose of this project is to publish quarterly citations to current literature in the high-temperature field. This bibliography is a self-supporting one and is obtained on a subscription basis. DeMaria presented a written report by Hocking. The number of subscribers is expected to be slightly larger than last year. Two new contributors have been secured. Production is now accomplished with a CP/M computer. Volume 27 and later ones will be sent to Freeman for inclusion in the *Bulletin of Thermodynamics*.

IUPAC Thermochemical Data Bank (TF-3). The purpose of this project is to make available to the high-temperature community thermochemical values for selected substances of high-temperature importance. The data bank is currently accessible on-line from the computer at the University of Toronto. The tables for the elements are now ready for printing in the *Bibliography*.

Zirconia-based Electrolytes for High Temperature Solid State Oxygen Gauges (TF-4). The purpose of this project has been to evaluate commercially available zirconia-based electrolyte tubes for oxygen gauges. Measurements in 10 laboratories were made on zirconia tubes obtained from five manufacturers. Anthony and Baumard reported that the five-year project was completed with the submission of a paper to the Division for transmittal to PAC. This paper not only gives the results of the collaborative study but also gives recommendations for successful use of the tubes in oxygen gauges. Two other publications are listed in the extended minutes. Another paper was given in the meeting "Zirconia-83".

Melting Points of Refractory Oxides (TF-5). This project has two purposes: (1) To publish recommended melting points, with uncertainties, for those oxides for which literature values are seemingly sufficiently concordant (oxides of Groups II, III, IV, and Rare Earths), and (2) to sponsor a collaborative experimental investigation in several laboratories to establish melting point values for other well-characterized oxides, especially CaO, Gd_2O_3 and HfO_2 .

Rand submitted a slightly revised version of Paper II, originally prepared by Coutures. He will correct it and send it around to Anthony, Coutures, Rosenblatt and Worrell. A first draft should be available at Santa Fe. Hlaváč reported that Coutures has obtained preliminary reports on new

measurements on Gd_2O_3 . Work on CaO and HfO_2 goes more slowly.

Carbide-Graphite Secondary Temperature Standards (TF-6). The purpose of this activity is to recommend as secondary temperature standards several metal-carbon systems whose eutectic or transition temperatures will be established by collaborative measurements in several laboratories. Komarek reported that Ettmayer has successfully prepared 3-cm samples of niobium carbide encapsulated in tantalum carbide. All samples should be ready for distribution within three months. Help is being sought on characterization of the samples. Clark, Metselaar and Rand suggested they might be able to help.

Classification of Si_3N_4 -based Materials (TF-7). The purpose of this project is to publish a classification of the silicon nitride-based materials which heretofore have been inexactly described as "densified silicon nitride". The project will emphasize the strong interdependence of chemical composition, phase diagram type, microstructures, and properties of the materials. Petzow and Sersale reported that silicon nitride alloys have a host of technologically important applications. A first draft of a report should be prepared by the end of April 1984. Silicon carbide-based materials are not to be treated at the present time.

Properties of Silicon Nitride Powders (CSG-3). The purpose of this project is to publish a review of the measurements and standardization of silicon nitride powders, including a ratio of *a*- to *b*-modifications, the content of elemental silicon, the adherent SiO_2 , and the determination of grain shape, grain size, grain size distribution and specific surface. Petzow and Sersale submitted a first draft of a paper *Procedures for characterization of Si_3N_4 powders* and asked for comments. The paper should be ready for submission to PAC within three months.

Reference Electrodes for Solid State EMF Studies (CSG-4). The purpose of this project is to publish mutually consistent standard values of oxygen potentials for a few high temperature reference electrodes which can be recommended for high-quality work in solid state electrochemistry. Rand submitted a status report describing the seven steps through which the work will proceed. About six metal oxide-metal reference pairs are to be selected. His proposed schedule indicates that a draft report should be available for Commission study before the Vienna meeting.

Nomenclature of Non-Stoichiometric Compounds (WP-1). This project has two purposes: (1) to prepare a revision of Chapter 9 of the existing Red Book entitled, "Crystalline Phases of Variable Composition"; and (2) to prepare an entirely new, extensive text on the nomenclature of solids. This work is carried out in conjunction with Commission II.2. Metselaar distributed the revised Chapter 9 of the Red Book. It resulted from a joint Working Party with II.2. Most of it will be in Part I of the new edition of the Red Book. Portions will be in Part II. The discussion included contributions from 12 of the 17 members then present. The most appropriate symbol for a vacancy received many comments.

High Temperature Mass Spectrometry Ionization Cross-Sections (TF-8). The purpose of this project is to publish a critical assessment of electron impact ionization cross-sections for gases and vapors of importance in high temperature studies. No report was presented in the absence of the leader. The Commission decided to continue the project for another year.

Terminology and Characterization of Carbon (SC-1). The objective, as stated previously, is concerned with Part I, "Terminology". The objective of Part II, "Characterization", is the recommendation of testing methods for the characterization of all carbon and graphite materials using the most advanced techniques. Definitions for about 90 terms that have been used to describe the many types of carbon and graphite will be published. Publication will occur in three stages, each of which will contain about 30 terms. Fitzer reported that tentative descriptions of the first 30 terms have been published for comment in *Carbon*, that 28 of these received support and agreement and that they will be submitted in two months for publication in PAC. Descriptions of 24 more will be published in *Carbon* in September 1983. This second set should be finished in 1984. The third set and studies on characterization will follow.

Appendix IV to the Green Book (WP-2). The purpose of this project is to work with Commission I.2 and other IUPAC bodies to make recommendations on resolving the dispute on the Standard State Pressure. Rosenblatt spoke for the Commission both in an informal meeting with Commission I.2 and in a formal one with I.1 and I.2. Many people attended from other Commissions and Committees. He spoke eloquently about the undesirable features of the recommendation of I.2 that the Standard State Pressure be changed from 101325 pascal to one bar. He cited the absence of necessity for the change, the likely great confusion arising because of the recommended change, the work of changing existing tables, the likely confusion in the electrochemical community because of the changes in the values for the aqueous solution half-cell potentials, the additional teaching difficulty, the divisiveness that the change has caused in the chemical community, and the lack of sufficient consultation with the affected scientists before the recommendation was made. The Commission plans to appeal to IDCNS and will inform all Commissions of IUPAC of its position.

New projects

A preliminary survey team of Anthony, Baumard, Corish and Metselaar will report within a year on the desirability of mounting a study on "Ionic Conductivity of Fluorite Structure Solids". Other suggestions were made and may be pursued informally.

Elections

Titular Members: Gurvich and Rand were re-elected for 4 years. Petzow was re-elected for 2 years. Metselaar was elected for 4 years (if allowed).

Associate Members: Alcock, Coutures, and Worrell were re-elected for 2 years. Hocking, Metselaar (if not a Titular Member) re-elected for 4 years. Corish and Yanagida elected for 4 years. Kihlberg elected for 4 years (if allowed).

Officers: Komarek and Gilles re-elected as Chairman and Secretary, respectively.

National Representatives: El-Sewefy, Yen, Matoušek, Baumard, DeMaria, Magnéli, Bayer, Rosenblatt, Ristić, Badri, Corish, and Clark all accepted.

Next meeting

Vienna, 6-7 September 1984.

P. W. Gilles

Commission IV.1 — Macromolecular Nomenclature: Lyngby, Denmark, 19-22 August 1983

The Commission made excellent progress in several areas during its meetings. It completed three documents: A comprehensive nomenclature for copolymers, a new classification scheme for linear polymers, and a summary of recommendations for terminology dealing with molar masses. The copolymer document has already been circulated to many specialists and journal editors, and has undergone several major revisions. It has received Division approval and is ready for publication in PAC as our 1983 Recommendations. The Commission, jointly with Commission II.2, approved a revised (definitive) version of nomenclature for linear inorganic and coordination polymers which we recommend for publication. Substantial progress was also made on definitions of terms used in polymer physics and chemistry, especially those involving stereochemistry, solution properties, and crystallinity of polymers. Working Parties were appointed to ensure continued advances in these and several other areas in which the Commission is active. Our next meeting is expected to take place in Prague, 5-8 September 1984.

N. M. Bikales

Commission III.2 — Physical Organic Chemistry: Lyngby, Denmark, 19-22 August 1983

A resumé of the Commission's main activities has been given in a previous report (*Chem. Int.*, 1983, No. 2, pp. 18-19).

1. *Nomenclature of organic transformations.* The rules for naming substitutions, additions and eliminations have reached the stage where only editorial attention is needed. The Commission considered in detail new draft rules for attachments and detachments and for rearrangements: little further revision will be needed before all these rules can be amalgamated. Further detailed attention is necessary for the rules for insertions and extensions and for couplings and uncouplings: the Commission hopes these will be finalised at next year's meetings. The rules for ring openings and closings and the list of complex transformations cannot be completed until final decisions have been made about the other classes of transformation.

2. *Symbolizing reaction mechanisms.* The Commission has extended the draft rules for a system intended to replace the obsolescent Hughes-Ingold symbolism in two ways: first by providing optional extensions to permit the description of, for example, diffusional processes, and second by incorporating extra-mechanistic information to permit the description of the nature and observed properties of the reaction, for example, that it is a substitution, or that it is subject to acid catalysis.

The extended symbolism that describes in detail the full mechanism of a reaction is now at an advanced stage. During the coming year consideration will be given to the form in which the two related systems are best presented.

3. Following the circulation and favourable reception of an informal report about naming hydrogen, the Commission is now formally recommending the following usage:

	General (unspecified or natural isotropic abundance)	^1H	^2H	^3H
Atom	hydrogen	protium	deuterium	tritium
Cation	hydro	proton	deuteron	triton
Anion	hydride	protide	deuteride	tritide
Group	hydro	protio	deuterio	tritio
Attachment of cation	hydronation	protonation	deuteronation	tritination
Isotopic replacement	—*	protiation	deuteriation	tritiation

*NOT hydration!

4. A joint Working Party with Commission III.1 (with representatives also from the Inorganic Chemistry and Macromolecular Divisions) on the terminology of stereochemistry held an initial meeting during the General Assembly.

5. The Commission noted with satisfaction the recent publication of the *Glossary of Terms used in Physical Organic Chemistry* (PAC, Vol. 55, pp. 1281-1371 1983).

6. The Commission held joint meetings with Commissions III.1 and III.3 to discuss matters of common interest. It is planned to facilitate meetings of the two joint III.1/III.2 Working Parties by holding next year's Commission meetings in the northeast United States shortly before or after the meetings of Commission III.1 in Montreal.

7. The Commission nominated Prof. V. Gold as its next Chairman and recommended the reappointment of Profs. G. Illuminati and K. Schwetlick as Titular Members and of Prof. M. P. Doyle and J. S. Littler as Associates. It also nominated its outgoing Chairman, Prof. J. F. Bunnett, as an Associate Member

and expressed its deep gratitude to him for all his work for the Commission since its inception.

R. A. Y. Jones

Commission V.5 — Electroanalytical Chemistry: Jülich, FRG, 2-3 November 1982

Four members of Commission V.5 participated, including the Chairman and the Chairman of the Subcommittee on Electroanalytical Methods of Environmental Trace Analysis. The meeting was also attended, in part, by the President of the Analytical Chemistry Division and by representatives of Commissions V.6 and VII.4. The consensus emerged that Commission V.5 should not limit its work to standardization of nomenclature but should be active in the standardization of methods, as a service to persons who are not specialized in analytical chemistry and work in multidisciplinary fields. This implies a role of leadership in the development of modern approaches to handling analytical problems in various fields of applied chemistry. The following guidelines were recommended:

1. For maximum efficiency it would be preferable that Commission V.5 first publish its own recommended methods and seek the collaboration of the Applied Chemistry Division at a later stage.

2. To be of maximum utility to applied chemists, Commission V.5 should offer one 'reference method' (judged as the best on purely analytical criteria) and a choice of other 'acceptable methods' (less precise and accurate, but possibly more easily applicable for practical purposes).

3. A joint meeting should be organized between the Analytical, Physical, Applied and Clinical Chemistry Divisions of IUPAC.

The status of the following projects was reviewed: Compilation of a Critical Sourcebook of Oxidation-Reduction Potentials in Aqueous Solutions; Definition and Standardization of the pH Scale; Determination of Trace Elements in Natural Water, Drinking Water, and Waste Water; Speciation of Trace Elements in Natural Waters; Trace Metals in Biological Materials; Organic Pollutants in Water, Biological Materials, and Soils; Trace Elements in Soil. Initiation of a new project on Electroanalysis of Radionuclides in Polluted Waters was recommended.

K. Izutsu

1984

BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.

(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

HIGH TEMPERATURE MATERIALS

April 2-6. 4th International Conference on High Temperature and Energy Related Materials. Santa Fe, NM, USA.

(Dr. G. M. Rosenblatt, Los Alamos National Laboratory, Chemistry Division, MS J563, Los Alamos, NM 87545, USA.)

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.

(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CARBOHYDRATES

July 1-7. 12th International Carbohydrate Symposium. Utrecht, Netherlands.

(Dr. J. P. Kamerling, Department of Bio-Organic Chemistry, University of Utrecht, Croesestraat 79, NL-3522 AD Utrecht, Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.

(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

MEDICAL POLYMERS

July 9-12. 26th Prague Microsymposium on Macromolecules: Polymers in Medicine and Biology. Prague, Czechoslovakia.

(26th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.

(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

MACROMOLECULES

July 16-19. 27th Prague Microsymposium on Macromolecules: Physical Optics of Dynamic Phenomena and Processes in Macromolecular Systems. Prague, Czechoslovakia.

(27th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

COORDINATION CHEMISTRY

July 29-August 3. 23rd International Conference on Coordination Chemistry. Boulder, CO, USA.

(Prof. Cortlandt Pierpont, Secretary 23rd International Conference on Coordination Chemistry, Campus Box 215, University of Colorado, Boulder, CO 80309, USA.)

CHEMICAL THERMODYNAMICS

August 13-17. Conference on Chemical Thermodynamics. Hamilton, Canada.

(Dr. P. A. G. O'Hare, Argonne National Laboratory, Chemical Technology Division, 9700 South Cass Avenue, Argonne, IL 60439, USA.)

ORGANIC CHEMISTRY

August 20-24. 7th IUPAC Conference on Physical Organic Chemistry. Auckland, New Zealand.

(Prof. B. R. Davis, Chemistry Department, University of Auckland, Private Bag, Auckland, New Zealand.)

COLLOIDS AND MACROMOLECULES

August 22-24. International Symposium on Physical Chemistry of Colloids and Macromolecules. Uppsala, Sweden.

(Prof. B. Ranby, Department of Polymer Technology, Royal Institute of Technology, S-100 44 Stockholm, Sweden.)

ORGANIC SYNTHESIS

August 27-30. 5th International Conference on Organic Synthesis. Freiburg i. Br., FRG.

(Prof. H. Prinzbach, Chemisches Laboratorium, Albert-Ludwigs-Universität, Albertstrasse 21, D-7800 Freiburg i. Br., FRG.)

RAMAN SPECTROSCOPY

August 27-September 1. 9th International Conference on Raman Spectroscopy. Tokyo, Japan.

(Prof. Mitsuo Tasumi, Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.)

REACTIVITY OF SOLIDS

August 27-September 1. 10th International Symposium on the Reactivity of Solids. Dijon, France.

(10e ISRS, Secrétariat Exécutif, Laboratoire de Réactivité des Solides, Faculté des Sciences Mirande, B.P. 138, F-21004 Dijon Cédex, France.)

LUMINESCENCE SPECTROMETRY

September 3-6. International Symposium on Quantitative Luminescence Spectrometry in Biomedical Sciences. Ghent, Belgium.

(Dr. W. R. G. Baeyens, Fakulteit van de Farmaceutische Wetenschappen, Laboratoria voor Farmaceutische Chemie en Ontleding van Geneesmiddelen, Harelbekestraat 72, B-9000 Gent, Belgium.)

AUTOMATION

October 15–18. 2nd International Congress on Automation in the Clinical Laboratory. Barcelona, Spain. (The Secretary of the Second Congress, Dr. R. Galimay, Apartado de Correos 543, Barcelona, Spain.)

COLLABORATIVE CHEMICAL ANALYSIS

October 25–27. 2nd International Symposium on the Harmonization of Collaborative Analytical Studies. Washington, DC, USA.

(Dr. H. Egan, Laboratory of the Government Chemist, Cornwall House, Stamford Street, London SE1 9NQ, UK.)

1985

POLYMER ANALYSIS

February 11–14. POLYMER 85: Characterization and Analysis of Polymers. Melbourne, Australia.

(Dr. J. H. O'Donnell, Polymer & Radiation Group, Department of Chemistry, University of Queensland, Brisbane 4067, Australia.)

AROMATIC COMPOUNDS

July 15–19. 5th International Symposium on Novel Aromatic Compounds. St. Andrews, UK.

(Dr. P. J. Garratt, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK.)

MACROMOLECULES

August 18–23. 30th International Symposium on Macromolecules. The Hague, Netherlands.

(Dr. J. A. M. Smit, Gorlaeus Laboratories, University of Leiden, Department of Chemistry, P.O. Box 9502, NL - 2300 RA Leiden, Netherlands.)

MASS SPECTROMETRY

September 8–13. 10th International Symposium on Mass Spectrometry. Swansea, UK.

(Prof. J. H. Beynon, Royal Society Research Unit, University College of Swansea, Swansea SA2 8PP, UK.)

CHEMICAL RESOURCES OF THE OCEAN

September 22–28. Chemical Resources of the Global Oceans — CHEMRAWN IV. Massachusetts, USA.

(J. R. Moore, Director, Marine Science Institute, University of Texas, Austin, TX 78712, USA.)

1986

PESTICIDE CHEMISTRY

August 10–17. 6th International Pesticide Chemistry Congress. Ottawa, Canada.

(Dr. H. V. Morley, London Research Station, Agriculture Canada, University Sub-Post Office, London, Ontario, Canada.)

PHYSICAL ORGANIC CHEMISTRY

August. 8th IUPAC Conference on Physical Organic Chemistry. Tokyo, Japan.

(Prof. M. Oki, Department of Chemistry, Faculty of Science, University of Tokyo, Tokyo 113, Japan.)

Snippets from Lyngby

A member of a Subcommittee, in a fit of remorse at the approach of the General Assembly, recalled that he had to write the introduction to a Subcommittee document and immediately wrote it and had it typed. Whilst going through his papers in detail before departing for Lyngby he found that he had written the introduction 2 years earlier and sent it to his Chairman. He had, however, received no acknowledgement or indication of further progress. He was consoled, however, on comparing the two versions to find that the second one was a distinct improvement.

At a joint meeting of three Division Committees the sole representative from one of the Divisions was not actually on the Division Committee and had turned up by chance out of curiosity.

A senior, well-respected IUPAC man commented that his hotel was fine except that the clothes cupboard was so small that if he hung up his trousers in it and shut the door they came out nicely pressed next morning.

The Executive Secretary hired a bicycle in order to travel expeditiously between his hotel in Lyngby and DTH. He became perturbed when several elderly ladies sped past him even on the flat. Further investigation revealed, however, that he was not losing his energies but the other bicycles had gears and his had not.

Quotations:

"Ve hate V.8" (Anon)

"Why is it that it is only chemists that seem to be so tired when they get home after work?" (One of the charming Danish typing assistants)

"If you cannot get a reply from the Inorganic Chemistry Division President send a reminder addressed to Dr. Mary Bad." (Anon)

Second International Symposium on The Harmonization of Collaborative Analytical Studies: Washington, DC, USA, 25-27 October 1984

Chemical analysis is widely used in many fields of everyday life, including food, health, environmental quality, commercial and industrial specifications, and control and consumer protection. The applied analytical method, validated by the process of collaborative analytical study and used in these ways, is today one of the most important end products of teaching, investigation and research in chemistry: this was one of the conclusions of the International Symposium on the Harmonization of Collaborative Analytical Studies organized jointly by IUPAC Analytical Chemistry, Applied Chemistry and Clinical Chemistry Divisions in Helsinki, 20-21 August 1981.

The second symposium, again sponsored by the three IUPAC Divisions, is co-sponsored by the US National Committee for IUPAC and is arranged jointly with the Association of Official Analytical Chemists as part of the latter organization's centennial celebrations. The meeting will again bring together many international organizations concerned with the validation of analytical methods. Its objectives will be to identify the design essential for the validation of the performance of analytical methods, to identify where possible the minimum criteria for an interlaboratory study for validation in the light of these and to compare the above design factors and criteria, as identified by various competent international organizations, with the view to their harmonization on an international basis.

The meeting will be held at the National Academy of Sciences, 2101 Constitution Avenue N.W. Washington, DC 20418, USA, 25-27 October 1984. Further details can be obtained from — Dr. H. Egan, Laboratory of the Government Chemist, Cornwall House, Stamford Street, London SE1 INQ, UK.

Author blindness

How big must a mistake be before you cannot fail to see it? I should like to say that we have been making some deliberate mistakes to see if anyone spotted them but, being basically honest, cannot do so. In each case the victim has been the International Council of Scientific Unions (ICSU). Did you notice the heading of the left hand column on p. 3 of *Chem. Int.*, 1983, No. 2 — **ISCU?**

If not, try *Chem. Int.*, 1983, No. 4, p. 25 —

ISCU.

If you missed that you will not have noticed the three ISCUs and five ICSUs in the text that follows. I should be very much obliged if you would be good enough to hide my largest mistake so far by cutting out the correct piece of the heading and sticking it over the wrong bit —

Unions (ICSU)

R. W. Fennell

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The International Union of Pure and Applied Chemistry (IUPAC), formed in 1919, is a voluntary, non-governmental, non-profit association of organizations, each of which represents the chemists of a member country.

Its objectives are:

to promote continuing co-operation among the chemists of the member countries;

to study topics of international importance to pure and applied chemistry which need regulation, standardization, or codification;

to co-operate with other international organizations which deal with topics of a chemical nature;

to contribute to the advancement of pure and applied chemistry in all its aspects.

The membership of IUPAC presently comprises 44 countries, each represented by a national organization, such as an academy of science or research council.

NATIONAL MEMBER ORGANIZATIONS

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Asociación Química Argentina (**Argentina**)

Australian Academy of Science (**Australia**)

Verein Österreichischer Chemiker (**Austria**)

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Chemistry International

The news magazine of the International Union
of Pure and Applied Chemistry (IUPAC)



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Front cover: Memories of Copenhagen, 1983.

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I can imagine many of you, having experienced my editorial performance during this year, saying to yourselves after at last receiving October's 'jumbo' issue, "I bet the next one will be a bit thin". You are, of course, absolutely right and, as I anticipated in the last issue, we are still very much concerned with the events and effects of the Lyngby General Assembly. There is the promised further batch of Committee and Commission summary minutes, some very brief and others longer but all well worth reading if you really want to know what is going on in IUPAC. If you do not understand, or want to know more about, any of the work items mentioned I am sure that the Chairman or Secretary (names and addresses in *Chem. Int.*, 1983, No. 5) of the relevant body would be only too pleased to put you in the picture, if asked. The amount of *voluntary* time and effort put into this work by the Members of Committees and Commissions is a sure sign that they believe in its validity and necessity.

The minutes go into the details of what individual IUPAC bodies are thinking and doing. The Secretary General's Column deals with the overall pattern of IUPAC affairs, as determined for the next biennium by the decisions of the Council, and with the policy worked out by the Bureau and Executive Committee within the framework of these Council decisions and the Union Statutes. Dare I suggest that this is even more worth reading than the minutes?

In this issue the attempt has again been made to break up the mass of words with pictures and, again, these are mainly of people. If the quality is not entirely up to the standard you expect, a large part of the fault is, in the majority of cases, with the photographer. One of the major lessons, for me, of the General Assembly was that the quality of the camera has little to do with photographic success rate. Without going into any statistics, let me just say that if you never see the result of my interruption of your meeting you now know why. However, I must add in my own defence that the poor quality of many of the photographs in the last issue was not the fault of the photographer; it was caused by some technical trouble that I do not understand but which those who do are trying to sort out.

Memories of Copenhagen

In *Chem. Int.*, 1983, No. 3, I tried to give those of you proposing to attend the General Assembly a very brief summary of Copenhagen's history and, on p. 17, a miniature guided tour — just in case you had any time to spare to look round the city. Did any of you try it? If so you may recognise some or all of the places shown on the front cover of this issue. The Town Hall (top left) needs no introduction to those who were in Copenhagen, but you would have had to walk up to the end

of the shopping street, to Kongens Nytorv, to have seen the Royal Theatre (top centre) and wandered around the pedestrian precincts to find Trinity Church (top right). The Marble Church (bottom centre) was, I was relieved to find, actually there, on the left, half way up Bredgade, and the Rosenborg Palace (bottom right) was in Kongens Have, on the left as I came down Oster Voldgade — so the map was right. Finally, the chrysanthemums in the Tivoli Gardens (bottom left) were even more impressive in daylight than at night.

IUPAC at Lyngby: Decisions in Denmark

The 32nd General Assembly at Denmark's Tekniske Højskole, Lyngby, in August, which has set the scene for most IUPAC activities for the next two years, was in most respects an unqualified success. The main decisions taken at the Council and Bureau meetings are set out below but, on behalf of the Union, I should like first of all to thank our Danish hosts for the efficiency of their local organization, stretching as it did over a period of nine days, and particularly for the excellent facilities and friendliness of the support staff they provided for the duration of the Assembly. During this period the unique character of IUPAC was maintained in as much as all the Commissions and other IUPAC bodies were able to assemble on the Lyngby campus and hold their discussions severally and often jointly.

These IUPAC General Assemblies really *are* Assemblies. Most delegates lived downtown in central Copenhagen and used the public train and bus transport system to the campus (but see p. 00). As I commuted I realised from the conversations around me that many important inter-Commission and inter-Division exchanges took place en route to Lyngby every morning and evening. Fortunately the weather was kind throughout and it was altogether a worthwhile and memorable meeting. Whilst I do not have the exact figures at hand I believe that about 650 IUPAC chemists registered for the meeting at some time during the nine days. This is a remarkable turn-out considering that there are only 1280 chemists in the 1981 Membership Lists. Obviously many of those attending were Associates, National Representatives or members of subcommittees. IUPAC makes no contribution to the expenses of such persons and we are, therefore, particularly grateful to those Associates and subcommittee members — also some National Representatives — who paid their own expenses to come and contribute to the success of the Assembly. We have to recognise, of course, that this influx of IUPAC chemists and their accompanying wives and husbands placed an unforeseen financial burden on our Danish hosts in entertaining or subsidising various social events for so many people. They coped magnificently and it is a pleasure to thank our Danish Colleagues most sincerely for their ceaseless attention and unstinting effort on IUPAC's behalf.

Another feature of this Assembly, which pleased the Officers greatly, was the unusually

large number of Chemical Society Presidents who attended as full National Delegates to the Council. This was no doubt a consequence of the decision of the International Meeting of Chemical Society Presidents to accept our 1981 invitation that they should hold their biennial meeting in conjunction with IUPAC Assemblies. We are very pleased indeed to have this widening link with chemists and Chemical Societies.

Report of the President: State of the Union

Our Editor has already reproduced President Nagakura's report on the state of the Union in *Chemistry International* (CI), 1983, No. 5, pp. 4–6. Here, therefore, I should like only to underline some of the main points featured in his report as a background to the rest of this column.

During his period as President, Prof. Nagakura and his fellow Officers have continued and reinforced the policies evolved under the leadership of Prof. Zollinger (President 1979–1981), e.g. to open the Union to involvement by a much greater number of chemists in several ways. Firstly, the Affiliate Membership Scheme, formulated during Prof. Nagakura's period as President by which individual chemists may, for the first time, become voluntarily associated with their International Union, was passed by a substantial majority at the Assembly, though it subsequently ran into a financial snag likely to prevent its immediate introduction — of which more later. This decision of the Union to throw its doors open to interested chemists all over the world and not only within member countries, is undoubtedly one of the most imaginative experiments it has ever agreed to undertake. Secondly, the open-door policy is also typified by the admission of countries uncertain about full involvement, or unable to pay the minimum IUPAC dues, to Observer Country status whereby they can send observers to Council meetings and, for a small service charge, receive all the relevant IUPAC literature that is circulated to full member countries who actively support the work of the Union. Thailand was welcomed as the first such member in 1982 and in 1983 Chile, Hong Kong, Nepal, Singapore and Peru also joined (Peru will be admitted to full membership in January 1984). This spread of IUPAC's membership in-



IUPAC President Prof. S. Nagakura opens the working lunch for Presidents of National Chemical Societies. Prof. P. Larsen (on the left) chaired the subsequent meeting of Society Presidents in Copenhagen.



Prof. G. G. S. Dutton (International Carbohydrate Organization) makes a point at the working lunch for IUPAC Associated Organizations whilst Dr. D. Lide (President-Elect, Division I), Prof. H. Pietsch (International Committee for Science of Photography) and Prof. C. H. Bamford (President, Division IV) digest his remarks.

to the Latin-American countries and South Asia is a significant and most welcome development. We hope that all six countries may in due course become full members of the Union. Thirdly, the Union decided to try to improve the flow of chemists through the Union's committees by introducing a limitation of the total time that any one individual can hold office on various IUPAC bodies. Principles were proposed for such limitation and a revised Bylaw will be proposed in 1984 for acceptance by the Council at its 33rd meeting in 1985. This again will have important consequences for the work of the Union and for the involvement of a greater number of chemists from IUPAC member countries.

During the two-year period the review of internal mechanisms to improve the efficiency of the Union in its traditional areas of activity within the Divisions and Commissions was intensified. President Nagakura congratulated Vice-President/President-Elect Schneider of Canada on his extensive and thorough review of the whole gamut of the Union's scientific activities. His critical assessment, including recommendations on the Commissions suspended in 1981 for inactivity, was subsequently received with acclamation by the Council and the recommendations were endorsed — see later. There is no doubt that the critical assessment of the scientific work of the Commissions, initiated by former President Zollinger in 1979, has been of considerable benefit to the work of the Union in many ways, particularly at a time when new initiatives can only be undertaken from within present financial resources, i.e. by discontinuing some less essential work. Similarly, Assistant Secretary General West had in 1982 made recommendations on re-organization of the work of the Secretariat at Oxford. The ever-increasing load placed upon Dr. Williams and his staff by the burgeoning activity of the Union necessitated changes in working procedures and workloads of the permanent staff, discontinuation of some work formerly undertaken centrally at Oxford for the Commissions and Standing Committees, and the mechanisation or computerisation of several tasks amenable to such improvements, e.g. by the introduction of a word-processing system. These changes had been approved by the Executive Committee and Bureau and provision for expenditure on the word processor, etc., was approved subsequently in the budget.

The role which IUPAC could play in helping to harness and direct chemistry for the benefit of mankind in general, e.g. via the recommendations of the influential CHEMRAWN series of conferences, had continued in the 1982 CHEMRAWN Conference on "Chemistry and World Food Supplies: the New Frontiers" held in The Philippines, reported in CI, 1983, No. 1, pp. 26–29.

The President also discussed the roles played by *Chemistry International* and by the scientific publications of the Union. The fate of the former had appeared to be in jeopardy in 1982,

but the appointment of Mr. R. W. Fennell as part-time caretaker editor and the decision of the Executive Committee to reorientate the magazine to concentrate largely on IUPAC news and issues has given it a new lease of life and vitality. The role of scientific publications is obviously an issue on which there is likely to be considerable discussion in the next few years. The President also squarely placed emphasis on the vital need for IUPAC to continue to improve its dissemination of information.

Election of Officers and Bureau: *New hands on the helm*

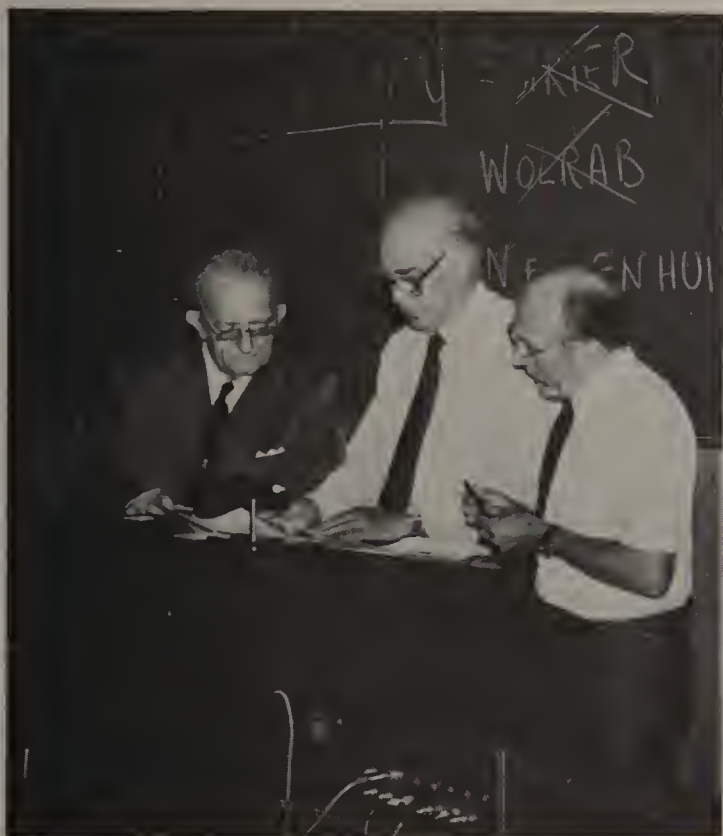
The elections at Lyngby saw an almost complete replacement of the Officers of the Union. Vice-President Dr. W. G. Schneider (Canada) automatically became the President for the period 1983–1985 and Prof. C. N. R. Rao (India) was elected in his place as Vice-President/President-Elect, also for the period 1983–1985. Prof. T. S. West (UK) was elected Secretary General in succession to Prof. G. Ourisson (France) for the period 1983–1987 and Prof. A. Björkman (Denmark) was elected to succeed Dr. W. Graulich (Federal Republic of Germany) as Treasurer, 1984–1987. I should perhaps say here that the Treasurer's office changes at the end of 1983, not at the end of the Lyngby Assembly, so that the out-going Treasurer can complete all the financial transactions for 1983. All the Officers have served in various senior capacities within IUPAC and constitute a broad and well-experienced team.

The Executive Committee and Bureau recommended to the Council that the number of places on the Bureau should be limited to eleven, in recognition that the size of Division Committees and Commissions had been curtailed during the past two years. Following keen competition, the following members were elected to the Bureau for the period 1983–1987:

Dr. A. J. Arvia (Argentina),
Prof. Y. P. Jeannin (France),
Prof. V. A. Koptug (USSR),
Prof. D. B. Tonks (Canada),
Prof. A. A. Vlček (Czechoslovakia),
Prof. H. Gg. Wagner (Federal Republic of Germany).

The last five members served previously (1979–1983) and, again, I should perhaps explain that election to the Bureau is for a period of four years, renewable for only one more period of ordinary membership. The continuing members of the Bureau whose periods of office extend until 1985 are Dr. J. W. Barrett (UK), Prof. A. D. Campbell (New Zealand), Prof. A. Kjaer (Denmark), Prof. J. Michalski (Poland) and Prof. C. G. Overberger (USA). Of these, only Prof. Campbell will be eligible for re-election in 1985; all the others have served for a previous four-year period.

An interesting point was made by members of the Australian delegation during a lull whilst



The tellers at the Council meeting, Dr. Graulich, Dr. Keay and Prof. Ourisson, assess the number of votes cast

the tellers were busy counting votes. It was suggested that in future the Bureau might consider making a statement of the basis upon which it made its recommendations from amongst the slate of candidates.* Obviously the Bureau will have to examine and report back its reactions to this proposition in 1985 at the 33rd General Assembly in Lyon. I cannot refrain from a personal comment here that, whilst this suggestion will obviously not be dismissed lightly by the Bureau, it is already difficult for it to select 'x' in preference to 'y' and 'z' and it would be even more difficult for it to state why. It may well be that on reflection the Bureau will find it impossible or unacceptable to make comparisons. However, the Bylaw does not require the Bureau actually to recommend *names*. The Bureau could quite well resolve the matter by advising the Council only that certain disciplinary areas of chemistry or geographical regions of the world are under-represented or have not been represented for some period of time or, indeed, that there is the possibility that they may become over-represented. The Bureau could thus recommend that Council should be guided by these observations in casting its votes. It could, of course, also announce names as well as principles. It will be interesting to see how this question is handled by the new Bureau and Executive Committee between now and 1985.

* Bylaw 2.222 states in respect of the election of Officers or Elected Members of the Bureau "... when the number of nominations exceeds the number of vacancies the Bureau shall make recommendations to the Council for filling the vacancies. These recommendations are not binding on the Council."

The new Bureau met briefly after the Council meeting to discharge several essential duties and to elect one member to fill the vacancy in the Executive Committee created by the end of the period of service of Prof. A. Perez Masiá (Spain). Prof. Y. P. Jeannin (France) was elected in his place. The Executive Committee, therefore, now consists of the Officers and Past-President Nagakura plus Prof. J. Michalski (Poland), Prof. C. G. Overberger (USA) and, of course, Prof. Jeannin (France). Both Profs Michalski and Overberger must retire as members of the Executive Committee in 1985 when they cease to be elected members of the Bureau.

The revised new dues structure: *Membership costs money*

For several years there has been considerable discussion within the Union on the mechanism by which IUPAC levies its dues to the different categories of member countries. In recent years these dues have been based on the Chemical Turnover (CT) figures available, or computed, for member countries. The Union has then estimated its financial needs for its various activities and responsibilities and, having arrived at a budget, allocated membership dues to groups of countries according to the A, B, C or D membership category in which their CT places them. Categories A, B and C are subdivided as far as dues are concerned though, at present, each A category country has six votes, each B category four votes and C, two votes. The minimal D category has one vote which can be used for scientific proposals only. In the past there have always been sharp discontinuities in the dues at the A/B and B/C borderlines.

The dues structure approved at Lyngby, revised from that accepted at Leuven in 1981, seeks to overcome the serious problems caused to countries whose CTs place them near these borderlines by applying a mathematical smoothing formula which relates the National Subscription (dues) for each country to its CT. The National Subscription to IUPAC for each country can, therefore, easily be predicted and unless there are very sudden changes in the CT for a country between IUPAC biennia, there should in future be no sudden awkward transitions in dues to be paid to the Union by the member countries. The 1983 minimal subscriptions, in US\$, are: A3, 70 000; A2, 54 000; A1, 33 500; B3, 18 600; B2, 9 800; B1, 4 900; C2, 2 450; C1, 1 225; D 600. In future each country would pay its own individual subscription rather than the flat rate for the allocated, or selected, category. Points raised during the debate which will be considered further are that the CT figures should be the average for, say, five years, that the National Subscription should be calculated in a currency other than the US-dollar and/or that the exchange rate for various currencies should be calculated in relation to a particular date near to the end of the year, thus avoiding problems created by fluc-

tuations in value of various currencies in relation to the US-dollar. These and other suggestions will be examined by the Finance Committee and its recommendations will then be discussed by the Executive Committee and Bureau.

The approval of the mathematical formula by the Council at Lyngby will make it easier for each National Committee to justify to its National Adhering Organization (NAO) the future provision of funds to meet the National Subscription to IUPAC at a defined level and will, we hope, considerably increase the certainty that IUPAC will receive its planned income. The Council, in making this decision, recognised that special circumstances may prevent some NAOs contributing to IUPAC funds in accordance with the provisions of the revised dues scheme — or indeed of the Leuven one. Some countries, may, for example, find themselves in the position in 1984 of having to pay more to the Union to remain in their previously allocated category, whilst a few others may have to pay less. However, after the transition to the new scheme, sudden fluctuations should no longer occur and if it is possible to define the National Subscription in US-dollars at a defined date, when the exchange rate is already known, and to average the CT over a period of several years thus defining the National Subscription clearly, many of the difficulties previously encountered by a number of countries will be eased considerably.

For those who are interested the National Subscription formula is

$$\frac{NS_i}{TNS} = \frac{(CT_i)^{0.68}}{\sum (CT_i)^{0.68}},$$

where NS_i denotes the National Subscription for country i in a given year, $\sum (CT_i)$ is the total of National Subscription income required by IUPAC in that year and CT_i is the chemical turnover for country i in the same year.

Notification was also given at the Council of a proposal to smooth out the voting system which presently allocates 6, 4, 2 and 1 votes to National Delegations by the introduction of 5- and 3-vote categories. This was not discussed, however, as it would require a change in Statutes and due notice of the proposal would have to be given to the member countries ten months previous to a Council meeting. This proposal, likely to be brought to the 1985 Assembly in Lyon, will probably cause considerable discussion.

New Statutes and Bylaws: *Confusion on categories*

No new member of a Commission or other IUPAC body is admitted without the written approval of his/her NAO. According to Bylaw 4.304, four months are allowed for this to be obtained. This has often meant that a new member of a Commission has not been formal-

ly appointed by the Union or briefed on his duties by Commission Officers in the year in which his appointment has been sought. At Lyngby the Council recognised the problem caused by the possible four month delay and accepted re-wording of the Bylaw to reduce the approved period to two months. This change is obviously beneficial, though if the approval is not forthcoming within the specified time, a further period has to elapse before the Executive Committee can consider the case.

At the Leuven Assembly in 1981 a proposal to modify Statute 3.3 to allow a member country to request to drop one category of membership below that corresponding to its CT was not approved. At Lyngby in 1983 a related proposal was introduced to the effect that there should be several categories of membership according to principles decided by the Council, that a potential member should supply data on which to have its membership category based whilst still allowing any Adhering Organization to request to be transferred to another category (the underlined words represent the changes to the existing Statute). This proposal was rejected amidst considerable confusion concerning what is now meant by 'category'. The matter of defining these (and presumably the principles) was referred back to the Executive Committee and Bureau for further discussion in 1985. The resolution of this problem should exercise the ingenuity and acumen of all concerned for quite some time.

Chemistry International: Read all about us!

Readers of *Chemistry International* will have seen the statement of the Officers and Chairman of the Publications Committee in CI, 1982, No. 6, pp. 1-2 which set out our proposals for the future of CI. It represented a new departure not only in relation to CI itself which has, since February 1983, been re-oriented to carry mainly IUPAC news but also, quite uniquely, reported what IUPAC had in mind in relation to one aspect of future policy. That brief statement was in fact the forerunner to the Secretary General's Column. The latter appeared for the first time in February 1983 with an account of what happened at the Bureau meeting in September 1982 and for the second time in August 1983, giving an account of the Executive Committee's deliberations in April 1983. Up until the August issue our temporary part-time editor — whilst making no claims to any experience in journalism — has done a very professional job. Under his editorship CI has informed all who are active in IUPAC exactly what is going on throughout the Union. The August issue, which appeared just before the Assembly, was, in my opinion, exactly right. It printed the Council's agenda in full and reproduced some of the papers being discussed by the Council, e.g. on the Affiliate



It's heads down for the IUPAC officers in the lengthy and rather confused discussion following presentation of the budgets for 1984 and 1985.



Mixed reactions from various Delegations in the Council meeting.

The UK Delegation breathes down the necks of their Soviet colleagues.



Scheme, the suspended Commissions (with the slightly provocative sub-title 'To be or not to be'), the new dues structure ('What price membership') and so on. It also gave short biographies and photographs of the candidates for election to the Officer positions and the Bureau. I believe that Council members had never arrived previously at an Assembly so well informed of the issues at stake — nor for that matter have Commission members ever had such a clear impression of what goes on in the Council, the Bureau and the Executive Committee that control their affairs.

There is no doubt that whilst CI may still look the same on the outside, there has been a radical change between its covers. Not only will there in future be reports on the deliberations of Council, the Executive Committee and the Bureau from the Secretary General, but also from most of the Divisions and Standing Committees of IUPAC. The newly appointed Editorial Board of CI had its first meeting at the Lyngby Assembly under the Chairmanship of the then Secretary General, Prof. Ourisson, and an account of its meeting appeared in CI, 1983, No. 5, pp. 00-00. It is our hope that the members of the Board will take an active part in providing or soliciting articles on the work and aims of their committees but will also provide feedback to the Editor.

Reactions to the new *Chemistry International* at Lyngby were very satisfactory indeed and particular praise came from Prof. K. H. Büchel, Chairman of the Committee on Chemistry and Industry, when he addressed the Bureau. A motion put down by one NAO to the Council, asking for discontinuation of CI but based on assessment of the 'old' CI, was withdrawn in view of the IUPAC-worthiness of the 'new' magazine.

Our part-time temporary editor has got the magazine off to a flying start in its new role and both the previous and present Secretary General have given their time freely and gladly to write about the Union in its columns. We now hope that this activity will be matched equally by all the correspondents of the Divisions and Committees of IUPAC who have agreed to provide support in respect of their own IUPAC bodies. *Members of the Editorial Board please note.*

The Affiliate Membership Scheme: *IUPAC says "Yes. . . but, . . ."*

Much has been written about the Affiliate Scheme in the pages of *Chemistry International* (CI, 1983, No. 4, pp. 17-20 and No. 1, pp. 6-10) which need not be repeated here. Following debate of this issue, the Council passed the resolution to introduce the Scheme with effect from January 1985 but, in the subsequent budget debate, it did not allow for the provision of US\$25 000 in 1984 and again in 1985 as a contingency sum, from within the Union's reserves to provide for the recruitment of an Affiliate Affairs Secretary cum Editor of



Prof. T. S. West explains details of the Affiliate Members Scheme

Chemistry International cum Union Information Officer to set up the system, after which the Scheme was to become self-financing. The motion to provide contingency funding in 1984-1985 was defeated by the narrow margin of two votes. It is, therefore, clear that whilst it is the wish of Council that the Scheme should be introduced, it is not willing to allow funds to be diverted from other activities within the Union or from reserves for this purpose at a time when the Divisions and Committees are having to operate on reduced funds.

If I may draw an analogy, this places the Officers in the position of a motorist at the traffic signals where he is given the welcome green light to go ahead, but suddenly finds that his engine has stalled. The question now facing the Officers is whether they can find someone to give them a 'push start' from outside the Union. I hope to be able to report on their reactions in the Secretary General's Column next year.

The suspended Commissions: New lease of life for some

The Vice-Presidential review of the work of the Divisions and Commissions of IUPAC carried out by Dr. Schneider made recommendations on the future of the Commissions suspended in 1981. Council endorsed these recommendations and since a detailed account of these was given in CI, 1983, No. 4, pp. 7-10, it is only necessary for me to say here that Commission III.4 (Medicinal Chemistry) still remains suspended whilst a working party

explores contacts in this area with the Committee on Chemistry and Industry (COCI), the International Union of Pharmacology (IUPHAR) and the International Union of Biochemistry (IUB), with a view to rebuilding an entirely new Commission with different terms of reference and a viable work programme consistent with IUPAC guidelines. It is not yet certain that this Commission will be restored, but it is an area in which the Union definitely wishes to be active.

Commission V.7 (Analytical Radiochemistry and Nuclear Materials) is being reconstituted as an Interdivisional Commission on Radiochemistry within the Analytical Chemistry Division under the Chairmanship of Dr. J. C. White and its objectives and terms of reference have been fairly well defined. The other Divisions involved are now nominating their representatives to occupy titular and associate positions reserved for them.

Commission VI.7 (Reclamation of Solid Wastes) was formally dissolved, but the Applied Chemistry Division has been authorized to make proposals to re-establish Commissions VI.4 (Atmospheric Environment) and VI.6 (Water Quality) with more closely defined objectives and terms of reference. In effect, therefore, it will be seen that the Union has only restored one of the original five Commissions and that has become interdivisional to serve a wider range of interests. The situation of three of the others is that proposals for completely redefined roles will be considered in due course. IUPAC has demonstrated its ability to review and to close down activities that are no longer considered relevant or which are not being pursued to its satisfaction. This process of critical assessment of scientific activities was built into the Statutes of the Union in 1981 as a regular ongoing requirement.

Limitation of period of service: *Writing on the wall*

At the 31st Assembly in Leuven a proposal was made by the delegation of the Federal Republic of Germany that there should be a limitation placed upon the total time in office for an individual on various IUPAC bodies. This idea was introduced not to prevent upward movement through the Commissions to Division Committees and to the Bureau, Executive Committee and Union Officer positions, but rather to limit sideways movements between Commissions or Divisions and specifically to permit the involvement of a greater number of chemists in the Union's affairs. The 1981 Council voted in favour of a study of the implications of this proposal by a subcommittee, not with the intention of making statutory changes but to look into the matter in general terms, to report back to the Bureau in the first place.

The ad hoc committee appointed under the leadership of Past-President Zollinger recommended a change in Bylaw 4.304, to the effect that exceptional circumstances must be established to permit consecutive membership

in any capacity of two or more Commissions of the same Division or of different Divisions or of different Division Committees beyond twelve years. The Council noted this recommendation and it was agreed that it could be used as a guideline for 1983–1985. A formal motion for amendment of Bylaw 4.304 requires eight months notification to NAOs and will, therefore, be proposed by the Bureau in 1984.

I should comment here that the phrase 'in any capacity' does not include National Representative or co-opted positions. The ad hoc committee also proposed a limitation of twelve years maximum for the rotation of individuals through alternate periods of Associate and Titular memberships of Commissions. No time limitation previously existed.

The effect of these changes should be to allow a greater flux of chemists through IUPAC without limiting movement from Commissions upwards to Union Officer positions. The 'exceptional circumstances' clause mentioned earlier allows some latitude to be used where this may be judged to be in the best interests of the Union. If again I may be allowed a personal observation, this suggests that, in theory, an individual could serve the maximum period of ten years (exceptional extension of two years) in a Titular capacity in a Commission followed by ten years (exceptional extension of two years) on a Division Committee then be elected for eight years (maximum) to the Bureau and finally become a Union Officer for a maximum of eight more years. By this time he would, of course, deserve a long-service medal. Perhaps we should ask the Editorial Board and Secretariat to try to find the longest serving IUPAC member to date. I'm sure our Editor would welcome letters claiming this distinction.

NAO proposals at Lyngby: *The IUPAC Lecture?*

Another proposal from the delegation of the Federal Republic of Germany at the Lyngby General Assembly was that IUPAC might institute a series of IUPAC Seminars to stimulate international co-operation within geographic regions and particularly in areas where geographical, financial or organizational factors made exchanges of scientific ideas more difficult than elsewhere. In this connection, Council endorsed the recommendation of the Bureau that this suggestion should be explored and examined in greater depth. The idea of IUPAC taking initiatives to 'show the flag' in remote or under-privileged areas is an excellent one. The Union will, however, have to try and avoid duplicating the role played by 'named lectures' or well-recognized seminar series that already circulate round the well-beaten track, if it is to try to achieve what I feel to be the spirit of the proposal made by the delegation of the Federal Republic of Germany at Lyngby.

The retiring triumvirate: *Vive valeque*

Unusually the Union had a complete change in all its Officer positions at the end of the Lyngby General Assembly. Tributes were paid to all three at the Assembly — much more adequately than I could ever do — but I cannot let this occasion pass without a small written tribute for the record.

Saburo Nagakura, twentieth President of the Union, will long be remembered for his gentle but always persuasive and firm leadership at a time when the Union has debated many difficult issues and had to take awkward decisions caused by financial stringencies. His diplomacy and his keen grasp of what is essential and basic to its long-range interests have been of inestimable value to IUPAC.

His consistent message that the Union must strive to communicate more clearly with chemists and non-chemists, to disseminate information more effectively and widely, and to seek to harness chemistry for the good of mankind has formed the background to all the many things he has done as President of IUPAC. Fortunately he remains on the 'front bench' for a further two years as Past-President. We will, beyond doubt, benefit greatly from his wisdom and experience. As Past-President serving on the Executive Committee and Bureau we have also had to say farewell to Heini Zollinger, whose influence and leadership unquestionably identifies him as one of the best Presidents IUPAC has ever had.

Guy Ourisson has from the outset, and throughout his entire period of office as the fifth Secretary General, played a major role in IUPAC. His bonhomie and friendly personality have smoothed a great many troubled situations. The wisdom and logic of his advice to the Union and to individuals in charge of various IUPAC bodies since 1975 and, perhaps just as important, his sense of humour and ability to listen and talk to people has surely made him one of the most respected and well liked Officers of the Union. Anything concerning the Union has been of vital concern to him. We will all miss his uniquely benevolent and genial presence as well as his pragmatic realism and hard work for IUPAC — none more so than his successor who was fortunate enough, due to unusual circumstances, to serve as his assistant in the Union during 1981–1983.

Wilhelm Graulich served as fifth Treasurer of IUPAC, 1979–1983. During his all-too-brief period of office he has steered the Union safely through one of the most difficult financial times it has ever experienced. His firm grasp and resolute but always friendly and sympathetic leadership of its financial affairs has been of enormous benefit to the Union during a very trying period. His fellow Officers and the permanent staff have very good reason indeed to be grateful for his innate grasp of essentials, for his sometimes stern defence of the Union's financial policies to which he has contributed so much and, always behind the scenes for his

warm, open, friendly personality. Dr. Graulich has been everything that a Treasurer should or can be and we all regret that he has, for health reasons, not been able to carry on in the post of Treasurer of the Union to which he has brought such distinction.

It happened at Lyngby: "*Hit me again Sam*"

When you think of it, the assembly of 650 chemists at Lyngby from countries all over the world who voluntarily and cheerfully give of their time and energy to the affairs of an international scientific union and in many cases pay for part or all of their travelling and living costs is quite a remarkable phenomenon. It is also clear from the 1982 Affiliate Scheme survey that many thousands more chemists would like to become more involved in the affairs of their Union and are willing to pay a small sum annually to demonstrate support of their profession as chemists. It is this enthusiasm and realism that makes IUPAC such a unique and effective body.

In concluding this column, I am aware that it contains nothing of the real work of the Union that went on in the Commissions and Working Groups at Lyngby and, in particular, none of the enormous wealth that flows from the multinational and multidisciplinary personal contacts that occur at these unique Assemblies. I hope that my colleagues on CI's Editorial Board will make up for some of these deficiencies. However, let me end now with a small story that *could* well have happened at Lyngby — perhaps it did.

Nomenclature Commission X is holding one of its several meetings at Lyngby in Room 000. The discussion is very 'active' and becomes quite heated. Titular Members are jumping up and down on opposite sides of the table, gesticulating and making their points in best IUPAC English and sign language [Nomenclature Commissions are always doing this of course]. Gradually, but inescapably, the Chairman loses control of the Commission; confusion rages. The Chairman slumps forward in his seat and the Secretary jumps up and bangs on the table with the Commission's "Book of Nomenclature" calling for order. But he too becomes excited as the Commission fails to respond and he mistakenly hits the Chairman over the head with the massive book. As the Chairman slowly slides down to the floor the Secretary grabs him and pulls him just above the level of the table.

"I'm very sorry Chairman", gasps the Secretary

"No, No", says the dazed Chairman.
"Hit me again Sam, I can *still* hear them."

There are many happy memories of the Lyngby Assembly as well as many 'stories'. It's always so whenever chemists get together.

They came from far and wide —



Dr. J. M. Barnett, Argentina.



Prof. H. Kao, Nanjing, China.



Mr. P. Hamakiotis, Greece.



Prof. A. R. Berkem, Turkey.

— to attend the IUPAC General Assembly

PURE AND APPLIED CHEMISTRY

The contents of forthcoming issues of PAC are, or are expected to be:

Issue	Pages	Contents	Commission
Vol. 55 (1983)			
No. 11, November	1669–1859	Plenary lectures presented at the 2nd International Symposium on Organometallic Chemistry directed toward Organic Synthesis, Dijon, France, 28 August–1 September 1983	
No. 12, December	1861–2022	Plenary and Keynote lectures presented at the 9th International Symposium on Microchemical Techniques ‘Microchemical Techniques and Trace Analysis’, Amsterdam, Netherlands, 28 August–2 September 1983	
	2023–2027	<i>Commission reports</i> Nomenclature, symbols and units recommended for <i>in situ</i> microanalysis	V.2
	2029–2065	Applications of ion-selective electrodes in nonaqueous and mixed solvents	V.5
	2067–2071	Recommended method for the gas chromatographic profile analysis of basic N-containing aromatic components (azaarenes) in high protein foods	VI.1
Vol. 56 (1984)			
No. 1, January		Plenary and Section lectures presented at the 11th International Conference on Organometallic Chemistry, Pine Mountain, GA, USA, 10–14 October 1983	

13th International Congress of Biochemistry

The Congress is to be held in Amsterdam, Netherlands, 25–30 August 1985. It will include daily plenary lectures, symposia, colloquia and poster sessions. Further details may be obtained from: 13th International Congress of Biochemistry, c/o Organisatie Bureau Amsterdam, Europaplein, 1078 GZ Amsterdam, Netherlands.

Compendium — Chemical and Physicochemical Test Methods

The Nederlands Normalisatie-Instituut (NNI) has prepared the compendium to enable the rapid determination of the existence, or otherwise, of an ISO test method for a given component or property. The compendium is available from NNI, PO Box 5059, Kalfjeslaan 2, 2600 GB Delft, Netherlands.

OTHER PEOPLE'S PUBLICATIONS

This section contains brief notes on the contents of publications issued by organizations with which IUPAC is in some way connected. If you wish to have more information about any of the items mentioned, would you please write to the appropriate persons as given in *Chemistry International*, 1982, Supplement, pp. 3–5 or 11–12? Staffing levels at the IUPAC Secretariat are such that enquiries might take a long time to be dealt with.

International Union of Biochemistry (IUB)

IUB Newsletter No. 24, September 1983. IUB acting General Secretary is Dr. R. L. Hill, Department of Biochemistry, Duke University Medical Center, Durham, NC 27710, USA. Membership of IUB and its Executive Committee; IUB Congresses — guidelines and venues; meetings of regional biochemical organizations; announcement of the 13th International Congress of Biochemistry, 1985.

International Union of Microbiological Societies (IUMS)

Newsletter No. 7, May 1983. Acceptance of IUMS as a scientific member of ICSU. Reports of meetings of IUMS Executive Board, New Executive Board, General Assembly (August 1982) and on the 13th International Congress of Microbiology (August 1982).

ICSU Scientific Committee on Problems of the Environment (SCOPE)

A booklet, dated January 1983, has been issued which gives up-to-date details of SCOPE — its aims, programme, membership. Chapter headings are: Aims and Criteria; Programme; Organization of SCOPE Projects; Financial Aspects; National Members and Chairmen of National Committees; Adhering ICSU Unions and Scientific Committees and Delegates; Constitution of SCOPE; Publications. The Executive Secretary is Ms. V. Plocq, to whom enquiries can be made at 51, boulevard de Montmorency, 75016 Paris, France.

ICSU Committee on Data for Science and Technology (CODATA)

CODATA Newsletter 24, January 1983. Brief report on the 8th CODATA International Conference, Warsaw, Poland, October 1982, highlighting papers on geosciences, computerized data handling, industrial and technological concerns. Inputs from CODATA Union Members (including IUPAC) for the 13th CODATA General Assembly, Jachranka, Poland, October 1982. Summaries on — *Guidelines for Development of Biology Data Banks*; Electronic materials information service; *Inventory of Data Sources in Science and Technology: a Preliminary Survey*. List of new publications.

CODATA Newsletter 25, April 1983. Membership of Executive Committee. List of Task Groups and Working Groups 1982–1984. Report on the CODATA Task Group on Thermophysical Properties of Solids. Announcement of the 9th International CODATA Conference, Jerusalem, Israel, June 1984, and of a Symposium on Critical Evaluation and Prediction of Phase Equilibria in Multicomponent Systems, Warsaw, Poland, May 1984.

CODATA Newsletter 26, August 1983. Report on a Conference on the Future of CODATA, June 1983 and a letter for the President — 'CODATA's Future'. Further details of the 9th International CODATA Conference. Report on a meeting of the Task Group on Gas Phase Chemical Kinetics, May 1983.

The 1984 International Chemical Congress of Pacific Basin Societies

The Congress, sponsored by the Chemical Institute of Canada, the Chemical Society of Japan and the American Chemical Society and given the short title PAC CHEM '84, will be held in Honolulu, Hawaii, USA, 16–21 December 1984. The scientific programme will consist of about 60 symposia and a large number of general papers. The symposia will be

organized in the broad topical areas: Agrochemistry; Analytical/Clinical/Environmental/Health Chemistry; Applied Chemistry; Biological/Pharmaceutical Chemistry; Catalysis/Colloidal/Physical/Surface Chemistry; Economics/Management; Geo/Inorganic/Nuclear Chemistry; Information Transfer/Computation; Macromolecular Chemistry; Organic Chemistry. The congress language will be English. Further information may be obtained from Gordon Bixler, International Activities Office, American Chemical Society, 1155 Sixteenth Street NW, Washington, DC 20036, USA.

IUPAC-SPONSORED CONFERENCES

Some details of the first IUPAC-sponsored conference in 1984 are given below; for further information please consult p. 31 for the address of the relevant organizers. May I take this opportunity to ask any readers connected with the organization of IUPAC-sponsored conferences to remind the relevant person to send me, the CI Editor, full details as early as possible so that these can be published in good time for the information of intending participants.

7th International Biotechnology Symposium, New Delhi, India, 19–25 February 1984

The Symposium is to be held in a newly constructed conference complex of a premier international hotel group. The scientific programme will consist of two keynote lectures on the opening day and, on the following days, two to four plenary lectures in the mornings will be followed by poster sessions after lunch, on subjects related to the plenary lectures. The official language will be English. One afternoon will, however, be devoted to four *panel discussions*: Biotechnology — resource base; Recombinant DNA cells and process scale-up criteria; Biotechnology — global priorities; Industrial effluents — environment and profit.

The *keynote lectures* will be on Contribution of Biosciences to Biotechnology and Contribution of Engineering Sciences to Biotechnology.

Plenary lectures will cover the following topics:

Horizons of recombinant DNA technology.

Metabolic regulation and over-production of metabolites.

Plant cell culture.

Hybridoma technology and animal cell culture.

Growth kinetics.

Mass cultivation of algae: conceptions and applications.

Microbial production of energy I: Liquid fuels.

Microbial production of energy II: Gaseous fuels.

Immobilized enzymes, cells and organelles.

Microbial transformations.

Secondary metabolites.

Microbial polysaccharides, surfactants and bioinsecticides.

Bioconversion of renewable resources to organic chemicals.

Biotechnology of fodder and feed.

Biometallurgy.

New separation methods.

Transport processes.

Novel bioreactors and scale-up concepts.

Process control and computer applications.

Process engineering and optimization: integrated biological systems.

We do not know who will be delivering these lectures.

The registration fee after 31 October is US\$200, a reduced fee of US\$35 being available for bona fide

students. Intending participants should check carefully requirements for visas and health requirements — and make sure that they have confirmed accommodation bookings, as spring is a favourite time for tourists in Delhi.

New Delhi is one of the most beautiful cities in Asia with a happy blend of the archaic, the old and the modern. Fauna and flora are rich and abundant and the weather in late February should be fine, with clear blue skies, dustless atmosphere and temperatures between 10 and 25°C.

Final note — don't forget to leave enough Indian rupees to pay the airport tax when you leave.

4th International Conference on High Temperature and Energy-related Materials, Santa Fe, New Mexico, USA, 2–6 April 1984

Previous meetings in this series were held in France (1977), Canada (1979) and UK (1981). This one takes place in the Sweeney Convention Center, Santa Fe, New Mexico, in the south-western part of the USA. Topics to be covered at the Conference include: new experimental techniques and instruments for high-temperature materials; properties of high-temperature materials; laser diagnostics of materials and their chemistry; synthesis of novel and high-temperature materials; phase equilibria and thermodynamic measurements; calculations of phase equilibria; vaporization processes and phenomena; energy storage systems; developments in nuclear energy materials; laser heat sources and applications. Following the now established tradition, the Conference is scheduled for a full week so as to avoid overlapping technical sessions and to allow ample time for discussion. Both oral and poster presentations will be given.

Plenary lectures expected to be given are:

Nuclear energy materials (M. H. Rand, UK)

Phase equilibria and thermodynamics: measurements (G. Petzow, FRG).

Energy storage systems (W. Worrell, USA).

New experimental techniques for high temperature materials (J. W. Hastie, USA).

Vaporization processes at high temperatures (J. Drowart, Belgium).

Laser diagnostics of materials and chemistry
(Hartford).

Phase equilibria calculations.

New techniques.

Registration fees will be US\$120 and include lunches and refreshments, a reception and a banquet (after 29 February 1984, the late registration fee is US\$135).

Santa Fe, the oldest capital in the history of the USA, is an enchanting city with the Sangre de Cristo mountains to the east, the Sandia mountains 87 km to the south in Albuquerque and the Jemez mountains 52 km to the west in Los Alamos. The weather is likely to be variable, ranging from sunny, possibly windy, spring days to wintery ones — with some snow, quickly clearing. Average temperatures range from -1 to 13°C , but watch out for sunburn.

SUMMARY MINUTES OF COMMITTEE AND COMMISSION MEETINGS

Committee on Chemistry and Industry (COCI): Lyngby, Denmark, 19 August 1983

Changes in Membership

Dr. D. A. A. Fagandini (UK) has been appointed to the vacant position on the Committee caused by the retirement of Dr. C. W. Suckling. Dr. W. J. Mijs has been appointed as a new member of COCI representing the recently established National Company Associates Group of The Netherlands.

IUPAC Company Associates Scheme

Prof. Büchel reported briefly on the present situation of the IUPAC Company Associates Scheme. At the end of 1982, 196 companies from 22 countries had joined IUPAC (1980: 158 member companies). At present 189 Company Associates (CA) from the total number of 196 CAs were represented by 15 members of COCI from 14 countries.

Recruitment of new Company Associates

It was agreed that the draft paper entitled *The Chemical Industry and IUPAC* (second version prepared by Dr. Suckling) should be used as a basis for a document for the recruitment of new CAs. However, the Committee felt that some additional information (e.g. How to become a Company Associate, etc.) should be included. Dr. Jäger was tasked to complete the document. Prof. Büchel suggested that this paper should also be published in *Chemistry International*. Reprints could be used to approach individuals in chemical industry by both the members of COCI and by National Adhering Organizations (NAO).

Chemistry International (CI)

Prof. Büchel informed the Committee that Dr. Degain has been nominated to be a member of the recently established Editorial Board of CI as the representative of COCI. All members of the Committee are invited to support Dr. Degain in his task. It was stated unanimously that the contents of the 1983 issues of CI are valuable sources of information on internal IUPAC matters. COCI welcomed the

change in the editorial policy with respect to CI and recommended that it should be continued in that way.

Critical assessment of IUPAC current programmes

Prof. Büchel referred to Dr. Schneider's report concerning the activities of several IUPAC units and reported on the efforts of the Committee to make valuable contributions to this review process from the point of view of chemical industry. It was agreed that COCI should continue to support the Vice-President in his task.

Cooperation with CHEMRAWN Committee

In his introductory remarks Prof. Büchel emphasized once again the strong interest of COCI in the ongoing activities of the CHEMRAWN Committee. An extensive discussion was held on the various CHEMRAWN activities. With regard to CHEMRAWN II (Chemistry and World Food Supplies: The New Frontiers, Manila, December 1982) Drs. Hao, Mormont and Shoukry, who attended the Conference, reported briefly on their impressions. In their views CHEMRAWN II was a conference of great importance and of a high scientific level. These views were confirmed by Prof. Büchel and Dr. Rhyner, who referred to second-hand information they got from other participants.

Dr. Jäger reported on the present status of the preparation of CHEMRAWN III (The Hague, 25–29 June 1984), the title of which had been changed to "World Conference on Resource Material Conversion: Chemical Process Bridges to meet Future Needs". Based on a provisional program and a draft synopsis of the parallel sessions the main topics of that conference were presented.

Prof. Büchel emphasized the strong interest of COCI in CHEMRAWN III and referred to the involvement of the Committee in the preparation of that conference by its Subcommittee on Organic Raw Materials. Dr. Jäger noted that up to now the Subcommittee has prepared 10 issues of literature surveys in the areas of fossil and renewable raw

materials, which should be made available to participants of the CHEMRAWN III conference (decision of the CHEMRAWN III Organizing Committee). The Committee agreed to dissolve the COCI Subcommittee after CHEMRAWN III and to discontinue the preparation of the literature surveys.

The contents and goals of CHEMRAWN IV (Chemistry and Resources of the Global Ocean, Woods Hole, MA, September 1985) were discussed briefly. No active involvement of COCI is planned for the time being. Nevertheless COCI expressed its interest in this future-oriented subject matter. With regard to a conference on *the molecular basis of carcinogenesis*, the discussion resulted in the following recommendations (to be rediscussed with CHEMRAWN Committee):

this topic should be a subject for a conference at the end of the decade;

despite the fact that the subject matter had separated from chemistry into the areas of biological sciences, the conference should be organized under the supervision of IUPAC (in close cooperation with biologically oriented associations).

Prof. Büchel informed the Committee on a decision of the German NAO concerning CHEMRAWN VI (Chemistry and Technology of Water and Waste Water, originally scheduled to be held in the FRG, 1986). Now the board of that chemical society had agreed not to use this topic. It is instead ready to support a conference entitled (tentatively) "Contributions of Chemistry to Human Health". COCI agreed unanimously to support this proposal. The Committee offered its assistance in the preparation of the conference (e.g. by establishing a Subcommittee) provided that the CHEMRAWN Committee and the IUPAC Executive Committee agree to this new topic.

COCI confirmed its strong interest in a CHEMRAWN conference entitled "Special Materials to Meet New Needs" introduced by the Japanese CHEMRAWN Committee. Dr. Takeda agreed to act as liaison member to the Organizing Committee in Japan. COCI took note of another proposal "Future Sources of Inorganic Raw Materials". This subject seems to be a suitable topic for a CHEMRAWN conference. It should be rediscussed when further details are available.

Involvement of COCI in Divisional matters

To improve the relationship between COCI and the IUPAC Divisions the Committee agreed to set up a 'delegate system'. Individual members of COCI agreed to act as contact persons between COCI and the Divisions (Division I, Dr. Rhyner; II, Ir. Mormont; III, Dr. Mijs, Doc. Scagius; IV, Drs Jäger, Rhyner, Shoukry; V, Dr. Rhyner; VI, Drs Fagandini, Hao; VII, Doc. Scagius, Dr. Shoukry). They have been tasked to become familiar with the ongoing work of the Divisions and to improve the contacts between COCI and these IUPAC units. Prof. Büchel was asked to inform the Division Presidents of that decision.

Suspended Commissions

An extensive discussion was held on the present situation of 'Medicinal Chemistry' within the Union. With respect to the (suspended) Commission on

Medicinal Chemistry (III.4) it was recommended that this important field of chemistry, in which numerous colleagues (especially from industry) are involved, must have an appropriate place in IUPAC. COCI agreed to support all efforts aimed at the re-establishment of Commission III.4. The Committee offered its assistance in the identification of active members and suitable projects.

The Committee welcomed the proposals made by the Applied Chemistry Division concerning Commissions VI.4, VI.6 and VI.7.

Next meeting

The 7th meeting will be held at Arnhem, The Netherlands, 29 June 1984.

G. Jäger

Physical Chemistry Division Committee: Lyngby, Denmark, 18, 21–23 August 1983

1. A proposal to establish a Commission on Chemical Kinetics was approved by the Committee (and later by the Bureau and Council in Lyngby). The Commission will develop recommendations on symbols and nomenclature, conduct collections of data in selected areas and provide coordination of matters dealing with kinetics throughout IUPAC. Although the Commission is part of the Physical Chemistry Division, it will be inter-Divisional in membership: two Titular Members from Division I; one each from Divisions II, III and IV; and one chosen for expertise in chemical engineering. Associate Members will be drawn from nominees of all Divisions.

2. Commission I.1 reported on its current projects to revise the *Manual of Symbols and Terminology for Physicochemical Quantities and Units* (the Green Book) and to prepare an abbreviated version that contains the most frequently used terminology. This shortened version is to be suitable for use in teaching and is expected to receive wide distribution.

3. A joint meeting of Commissions I.1, I.2 and II.3 was held to discuss the controversial change in standard state pressure that has been recommended by IUPAC. It was decided to wait about 3–5 years to ascertain the response of the broad scientific community before making any further changes. Meanwhile, an educational campaign by Commission I.2 on the reasons for the change has been undertaken.

4. From a long discussion of the processes by which recommendations from Commissions are disseminated, there emerged the following points:

(a) The present procedure for publishing in *Pure and Applied Chemistry* (PAC) is unsatisfactory, since it is not widely read. It would be preferable either to devote one issue of PAC each year to recommendations and permit that issue to be sold separately or to publish recommendations in a separate IUPAC journal. These might be further subdivided according to Division and sold separately.

(b) In addition to IUPAC publication, it is desirable to republish in speciality journals whenever feasible in order to obtain wide distribution. In the USSR this is done (for translated versions) by the National Adhering Organization. Perhaps NAOs or Chemical Societies in other countries could take some initiative in this matter.

(c) Republication of the material from the Green Book and other IUPAC documents in the *Handbook of Chemistry and Physics* was arranged readily. This outlet might be suitable for certain other recommendations.

(d) In renegotiating the publication contract in 1984, IUPAC should look for a publisher who aims for low cost, high volume publications that are aggressively marketed. IUPAC should have a means of negotiating prices of books that is more effective than the present arrangement with Pergamon.

(e) Synopses of recommendations, together with information for obtaining reprints, should be published regularly in national chemical news magazines.

5. The Committee expressed great interest in the plans for an IUPAC-wide policy on use of computer databases, since the Division produces a large amount of numerical data. The President of the Division has been asked to participate in a committee under the chairmanship of Prof. Koptug to develop proposals for IUPAC action.

6. The Committee discussed a number of aspects of the proposal for IUPAC Affiliates. One particularly interesting suggestion for broadening the base for participation in IUPAC was advanced — that

UNESCO be asked to provide contributions to dues payments (categories C or D) for potential NAOs in less developed countries.

7. A large number of new and continuing projects was reviewed and approved by the Committee for the next biennium. Details are given in the document *IUPAC Current Programmes* and in the summary minutes of individual Commissions.

8. The Committee agreed with the assessment of the Division Vice-President that the work of Commission I.4 on Physicochemical Measurements and Standards is largely complete and voted to dissolve the Commission. A Subcommittee on Physicochemical Measurements and Standards was formed to complete the project of preparation of a book on reference materials.

9. Problems arising from the continuing restriction of six Titular Members on each Commission were discussed by several Commission Chairmen. One Chairman reported that of the six members, one had died and two are unable to attend this Assembly. While the example is extreme, the probability of one or two members being absent is high, and the lack of a 'critical mass' to transact business and to achieve balance in scientific fields and geographical distribution is significant.

10. It was pointed out that IDCNS is not involved in reviewing data collections. At times incorrect symbols or terminology have appeared in such IUPAC-generated compilations. There seems to be no formal mechanism to discover and resolve conflicts.

E. D. Becker



The new Physical Chemistry Division Committee. From left to right — seated, Dr. E. D. Becker, Dr. D. R. Lide, Prof. K. I. Zamaraev, Prof. N. Sheppard; standing, Dr. K. N. Marsh, Prof. K. Tamaru, Dr. R. Parsons, Prof. G. M. Schneider.

The Committee reformulated and extended the rules for the organization of Macromolecular Symposia and Conferences for which IUPAC sponsorship is requested. These rules set out a minimum number of criteria for the scientific programme to ensure quality as well as breadth of international participation. They impose *inter alia* that recommendation for IUPAC sponsorship should normally be preceded by a discussion of the proposal by the Division Committee, that rotation of specific topics and invited lecturers should always be attempted, that younger macromolecular scientists should be seriously considered as invited lecturers and that, as far as possible, reports on the progress of appropriate activities of the Division's Working Parties should be included in the scientific programmes. One or more members of the Division have to be appointed on the scientific committees of IUPAC-sponsored Macromolecular Symposia with the specific aim of ensuring that the Division's recommendations are taken into consideration. The rules also limit the frequency of the large multi-topic symposia to one every year. In the future (starting in 1988) these symposia will be held in *even* years in order to avoid competition with the IUPAC Congresses and to facilitate informal Division Committee Meetings in non-Assembly years.

These rules were applied during the discussion for recommendation of IUPAC sponsorship for six single-topic symposia to be held in 1984 and 1985. In none of these cases was it necessary to withhold recommendation, although some of the Organizers will be notified about minor conflicts of their proposals with the new rules.

Another important decision of the Division Committee was to endorse some of the recommendations concerning the stimulation of education in polymer science formulated in a US report on "Polymer Science and Engineering; Challenges, Needs and Opportunities". These recommendations ask for the integration of polymer concepts into the traditional courses of chemistry, biochemistry and physics, and into some of the engineering ones; inclusion of introductory polymer courses in chemistry, physics, chemical engineering and materials science programmes (at the advanced undergraduate or beginning graduate level); multiplication of academic centres offering graduate concentration in polymer research; introduction of polymer-related subjects in the programmes of those universities that do not offer this important educational opportunity. Although these recommendations were originally grafted on the situation existing in the USA, the Committee considered that, with a few exceptions (such as in the USSR and Japan), the situation was similar in most of the other countries in spite of the recognition of the importance of polymer science for other disciplines and for industrial development. These recommendations will be distributed to the NAOs through their National Representatives in the Division and the NAOs will be asked to try to implement these recommendations in their respective countries as far as it is necessary. It was also decided that the Division should consider setting up a working party to outline basic teaching programmes in polymer

chemistry, eventually in collaboration with the IUPAC Committee on Teaching of Chemistry.

The Division Committee had invited Dr. den Os, Chairman of the Committee on Publications of the Union, to discuss reconsideration of the Division's publication policy. In view of the information received from Dr. den Os it was decided not to change the present policy until further guidelines would be received from the Editorial Advisory Board to be set up for *Pure and Applied Chemistry*.

New formulations of the terms of reference for the Division and its few Commissions were accepted. They can now be stated as follows. For the Division: "to identify areas in macromolecular science where there is a clear need for more scientific information, data and theory, and to facilitate advances of this science and the more effective application of macromolecules". For Commission IV.1: "to provide systematic and unambiguous nomenclature in the field of macromolecules acceptable to scientists throughout the world and consistent with usage in other disciplines". For Commission IV.2: "through collaborative study to obtain data and understanding on the relationships between molecular structure, production processes, morphology and properties of polymeric materials, in order to promote their wider and more effective use".

The Committee approved the reports of the Division's two Commissions. It was satisfied to hear *inter alia* that the final formulation of the recommendations for the nomenclature of copolymers has been completed and that Commission IV.1 will produce a compendium (the "purple" book) for terms and nomenclature of molecular compounds (including natural polymers). It also recognized the efforts of Commission IV.2 to open new areas for Working Parties' activities. The two new topics for which the possibility of formulating programmes and setting up a Working Party will be explored, i.e. "Liquid Crystalline Polymers" and "Biocompatibility of Polymers", met complete approval of the Committee. It was also acknowledged that one of the existing Working Parties (WP on Surface Properties of Films and Fibres) had been dissolved albeit that some of its activities will be taken up within the Working Party on Supported Films.

Discussing the critical assessment of the Division and its Commissions in the Union Vice-President's report, the Committee came to the conclusion that some of the referees quoted apparently did not fully realize that the members of the Working Parties of Commission IV.2 were actually involved in doing *experimental* work, in many cases in industry, without any financial support from IUPAC and in their employers' time. The Committee agreed with the Chairman of Commission IV.2 that such experimental work will necessarily have to be rather slow and that a period of economic recession, with subsequent reduction of budgets, could be most harmful to the pace with which these Working Parties have to proceed. These difficulties should be fully recognized by the Union and, rather than blame certain Working Parties of this Commission for slow progress, it should express satisfaction that so many benevolent scientists and companies are still willing to cooperate in these collaborative studies under difficult circumstances.

The discussion on the proposed Affiliate Scheme, as requested by the Assistant Secretary General, led to the conclusion that, although strongly in favour of the basic ideas underlying the Affiliate Scheme, the Committee could not identify any particular advantages for the Division from the proposed scheme which could not be also obtained by other means involving fewer problems.

Finally, following the elections of four new Members and four new Coopted Members, the Division Committee will have the following composition in the forthcoming 2 years:

Prof. C. H. Bamford, President; Prof. T. Saegusa, Vice-President; Prof. M. Mandel, Secretary; Dr. P. L. Clegg, Prof. W. Heitz, Prof. E. M. Pearce, Prof. N. A. Plate and Prof. P. Sigwalt, Members; Dr. E. M. Carrega, Prof. B. Cholla, Dr. J. Economy, Prof. N. Ise, Prof. M. Kryszeuski, Dr. H. Lange, Prof. D. C. Pepper, Prof. B. Philipp, Prof. P. Pino, Prof. B. Ranby, Prof. A. Silberberg and Prof. C. I. Simionescu, Coopted Members.

M. Mandel

Applied Chemistry Division (ACD)

Committee: Lyngby, Denmark,

18-23 August 1983

Objectives of the Division of Applied Chemistry

The Applied Chemistry Division deals with the application of chemistry to man's needs, for example the food he eats, the water he drinks and the air he breathes. The Division is concerned with the identity and fate of chemicals as a result of natural and technical processes, and any adverse effects on man and his environment. It is also concerned with emerging technologies which result in the appearance of new chemical or biochemical products in the environment.

The Division Committee administers the activities of Commissions devoted to food chemistry, oils and fats, pesticides, biotechnology, atmospheric chemistry and water chemistry. The Division coordinates the activities of its Commissions with other Divisions and Committees on projects of mutual interdisciplinary interest.

1. Membership of the Division Committee

The result of the ballot was accepted. D. Firestone and K. Lechnitz were elected to Membership (1983-1987). The following members would correspond with Commissions: H. Egan (Pesticides); J. Holló (Oils and Fats); K. Kojima (Food) and P. Kearney (Biotechnology). It was agreed that R. Greenhalgh, S. Gorbach and S. Luxon would be co-opted to Membership 1983-1985.

2. Report on Activities of the Commissions

The President reported that the most striking development was the reports of the Working Groups set up to investigate the need or scope within which IUPAC should be engaged, if at all, in the fields of wastes, atmosphere and water. The reports of the Working Groups were submitted to W. Schneider,

recommending that Commissions on Atmospheric and Water Chemistry should be re-established and that problems related to solid wastes could be studied in conjunction with Water Chemistry. The reports were accepted by the Executive Committee (102nd Meeting, April 1983). Assessment of the programmes of the other Commissions were made from reports submitted by the Commission Chairmen. The programme activities were reviewed and it was noted that there were 40 current projects and 11 proposals for initiation of projects, of which two were referred back to the appropriate Commission. It was regretted that no report had been received during the year from the Commission of Biotechnology.

3. Divisional Rules and Guidelines

The fully amended Rules of ACD were accepted together with Guidelines for the Division Officers, Corresponding Members, Commissions' Officers and Liaison Members.

4. Report Highlights from Commissions

4.1. Food: Several projects had been successfully terminated and the programme of the Commission has gradually moved almost entirely towards the study of mycotoxins. The new Chairman of the Commission has proposed restructuring by the creation of many working groups, and each Associate Member would be responsible for one or more of these groups.

4.2. Biotechnology: The Commission at Lyngby extensively reviewed its objectives and initiated procedures for the continuation of projects over the next 2 years. It is hoped that the Commission would be more active in future.

4.3. Oils, Fats and Derivatives: The work of the Commission continues to be extensive; collaborative



Dr. L. E. Coles, Secretary, Division VI

studies have been completed on methods for emulsifiers, total sterols, acetone insolubles in lecithin, triglyceride composition of fats and oils (carbon number), and hexane residues in oilseed meals. Plans have been made to publish a reprint of the 6th edition of the Commission's methods of analysis.

4.4 Pesticide Chemistry: Three projects were finalized, i.e. non-extractable residues, model ecosystems and cost effective analysis, five others are in progress and three new projects were initiated. Many projects have been completed. The next Pesticide Congress will be held in Ottawa, Canada (10–17 August 1986), and the theme will be Food Production and Environmental Exposure, with emphasis on chemical aspects.

5. Interdivisional Matters

5.1 Representation: It was agreed that S. Luxon should become the new Titular Member (replacing J. Oksanon) and H. Egan, an Associate Member (replacing H. Freshe), on the Interdivisional Committee on Nomenclature and Symbols (IDCNS). W. Klein (Pesticides) was nominated to represent the Division on the proposed new Commission on Chemical Kinetics. It was also agreed that the Division should be represented on the proposed new Commission on Radiochemistry and Nuclear Techniques.

5.2 CHEMRAWN: The programme for the next 5 years was outlined by H. Egan. CHEMRAWN III would be on "Resource Material Conversion to Meet Future Needs" at The Hague, Netherlands (25–29 June 1984) and CHEMRAWN IV would be on "Chemical Resources of the Oceans" at Massachusetts, USA, in September 1985.

6. Publication Matters

The President reported that an IUPAC publication should be as a result of a Commission project and be offered for publication in PAC. L. Coles represented the Division on the Editorial Advisory Board of *Chemistry International*, which had its first meeting in Lyngby. Each board member will provide information on activities and news items of his Division. The Division Committee and Commissions were in favour of continuing CI in its *new* form.

7. Scheme of Affiliate Membership

After a full discussion, it was decided that the Division approved a proposed Scheme of Affiliate Membership, mainly because it would allow direct world-wide dissemination of information on the work of IUPAC to all interested chemists (not only IUPAC member countries).

8. Harmonization of collaborative analytical studies

H. Egan reported on the second meeting of the Centenary Joint Subcommittee on Harmonization. The symposium would be treated for IUPAC programme purposes as a project. The objectives were to identify the design essential for the validation of the performance of analytical methods, to identify where possible the minimum criteria for an interlaboratory study for validation in the light of the above and to compare the above design factors and criteria, as identified by various competent international organizations, with the view to their harmonization

on an international basis. The programme outline had been confirmed and the symposium would be held in Washington from 25 to 27 October 1984 at the National Academy of Sciences.

9. Relations to other bodies

9.1 International Standards Organization: The Secretary reported that since the IUPAC Secretariat no longer had an active liaison with ISO the collaboration between the Division Secretary through the Commissions was not effective. It was decided, after discussion, that ISO should be requested to send to all Chairmen of Commissions Steering Group minutes for examination. Any papers of interest to the Division Commissions could then be requested by the appropriate Secretaries.

9.2 SCOPE: The Committee were reminded that further activities of SCOPE might include problems to do with water and any new Commission concerned with Water Chemistry should actively liaise. For example, the theme of CHEMRAWN IV would be concerned with the chemistry of the oceans.

10. Reports

Reports of the 46th Meeting of Bureau (Prague: 13–14 September 1982) and Meeting of Division Presidents (Prague: 11 September 1982) and the 102nd Meeting of the Executive Committee (Tokyo: 12–13 April 1983) were received. The President referred to Minute 15.2./82 of the Meeting of Division Presidents and reported that Terms of Reference for the Division would be drawn up and all ACD Commissions were asked to do the same.

11. Financial Matters

The President reported that the financial situation in the Division was satisfactory and all budget requirements had been met.

12. Next Meeting

The next Meeting will be held at the National Academy of Sciences, Washington DC, USA, at 9.30 am on Monday 22 October until Wednesday 24 October 1984.

L. E. Coles

Clinical Chemistry Division Committee — Subcommittee on Clinical Chemical

Standards: Lyngby, Denmark,
19 August 1983

1. The Chairman (Dr. S. S. Brown) reviewed the correspondence, dating back to 1980, about the proposed formation of a Commission on Standards within the framework of the Clinical Chemistry Section/Division. At the Leuven General Assembly (1981), it had been agreed that it was inappropriate to establish a Commission, but that a Subcommittee should be formed to work out the feasibility of the proposal. Initially, the Subcommittee was to be composed of the elected members of the Division Committee under the chairmanship of the Vice-President of the Division.

2. During the period 1981–1983, a series of documents emanating from international bodies and relating to standards in Clinical Chemistry had been circulated for comments, and appropriate responses had been offered through the IUPAC Secretariat.

3. The members of the Subcommittee assessed the potential usefulness of these documents in Europe, Africa and Asia, and outlined important outstanding problems in Clinical Chemistry in these regions. It was agreed that these problems were of a practical rather than a conceptual nature; therefore it was more appropriate that they should be tackled by the International Federation of Clinical Chemistry (IFCC), rather than by IUPAC. It was noted that IFCC had begun to establish an International Information System on Reference Technology in Clinical Laboratory Sciences, and it was expected that this would fulfil at least some of the originally projected need for a standards-setting or -recommending body in Clinical Chemistry.

4. It was agreed that the Division Committee or a newly-constituted Standards Subcommittee should continue to be aware of, and respond to, standards documents or drafts which had a bearing on the principles and practice of Clinical Chemistry.

S. S. Brown

Joint Meeting of Analytical, Applied, and Clinical Chemistry Division

Committees: Lyngby, Denmark,
18 August 1983

The meeting was considered an informal one; an Agenda had not therefore been prepared because no topics of immediate joint importance (other than those mentioned below) had been identified.

Dr. Egan reported on the status of preparations for the IUPAC–AOAC International Symposium on the Harmonization of Collaborative Analytical Studies, to be held 25–27 October 1984 in Washington, DC. On the part of IUPAC, it will be sponsored jointly by the three Divisions, and it will be held in conjunction with the AOAC Centennial. Contributions from the Divisions will be welcome, although the majority of papers to be presented are by invitation of the joint organizers. It was generally accepted that the main subject of the Symposium (criteria for validation of analytical methods) is of the utmost importance to various Commissions represented by the three Divisions.

Dr. Coles (VI) stressed the importance of discussing aspects of Good Analytical Practice, particularly because existing Guidelines, e.g. those published by the Organization for Economic Cooperation and Development (OECD), are fairly general in their approach and place more emphasis on studies conducted in a toxicological context. Prof. Nürnberg (V) offered to consider a contribution based on comparative studies he had coordinated on the determination of trace elements in natural waters. This

project will also be of interest to a future Commission on Water Chemistry, which is to be reestablished, pending a decision to be made by the Council in 1983. Prof. Nürnberg and the President of Division VI are keeping in touch on this matter.

H. Frehse

Commission I.2 — Thermodynamics:

Lyngby, Denmark, 19–21 August 1983

In 1982, Appendix 4¹ to the 'Manual'² was published, the work mainly of Commission I.2. One of the minor recommendations in this Appendix was that, in future work on some chemical thermodynamic functions, the standard state pressure of the zero reference point should be taken to be 10^5 Pa, instead of 1 atm ($1.013\,25 \times 10^5$ Pa). This recommendation aroused a surprising amount of argument and misunderstanding, and so at Lyngby this specific question was discussed at a joint meeting of Commissions I.1, I.2 and II.3 with observers present from the Physical Chemistry Division and Commissions I.4 and V.8. In all, there were about 50 participants and the views expressed resulted in the agreement of Commission I.2 to issue documents detailing the effect of the change and to monitor its effect.

In meetings with Commission I.1, the effect of their revision of the Manual upon the work of I.2 was discussed and, as a result, three projects have been set up. The first will revise Appendices 1 and 4, with a view to producing a single version; the second will produce a coherent set of definitions of the standard states important to the properties of mixtures; and the third will continue work on symbols and nomenclature for certain energy functions which was not completed in Appendix 4.

The Task Group on the Coordination of Meetings will continue its work and will also endeavour to arrange for accounts of the work of IUPAC to be given at selected conferences.

Reports were received and discussed on points of common interest with other bodies: within IUPAC, at a joint meeting between I.2 and V.8 (the Solubility Data Project); and outside IUPAC, from CODATA, from the Interunion Commission on Biothermodynamics and on liaison with the European Federation of Chemical Engineers. A Working Group of the International Association of Geochemistry and Cosmochemistry, which deals with the thermodynamics of minerals, suggested that there should be some interaction with I.2, and it was agreed that there should be a favourable response to those working in a rapidly-growing field of importance.

The current activities of the *Journal of Chemical Thermodynamics* and of the *Bulletin of Chemical Thermodynamics* were reviewed. A report was received on the preparations for the 1984 International Conference on Chemical Thermodynamics to be held at Hamilton, Ontario. The invitation of the Portuguese Chemical Society to hold the 1986 Conference in Lisbon was accepted, and the possibility of holding the 1988 Conference in Prague was favourably noted.

The Commission has two Subcommittees, both of whom met and reported. The Subcommittee on Thermodynamic Tables (I.2.2) now has four projects: two are the preparation of books for the 'International Thermodynamic Tables of the Fluid State' series, one on fluorine and one on oxygen; another is a book which will critically review and collate all experimental data on enthalpies of evaporation; and the fourth is an exercise in international cooperation on the properties of alkane/alkanol mixtures. The Subcommittee on Transport Properties also reported. The enlargement of the Imperial College IUPAC Thermodynamic Tables Project Centre into the Imperial College Thermophysical Properties Data Centre, which will be prepared to act also as the Project Centre for Transport Properties, was also reported.

The Commission devoted considerable time to a discussion of future activities. Twenty-two possibilities were examined, and two were selected for further study. A feasibility study is to be made of a survey and assessment of calorimetric instruments, and a second study, to be made by Subcommittee I.2.2, will examine the possibility of giving information on the quality of data produced by on-line data bank systems. CODATA will be kept informed of the progress of this work.

Notes

1. Notation for states and processes, significance of the word "standard" in chemical thermodynamics, and remarks on commonly tabulated forms of thermodynamic functions. *Pure Appl. Chem.*, **54**, 1239-1250 (1982); *J. Chem. Thermodynamics*, **14**, 805-815 (1982).

2. *Manual of Symbols and Terminology for Physicochemical Quantities and Units*, ed. D. H. Whiffen, Pergamon Press, Oxford (3rd edn., 1979).

G. M. Schneider

Commission I.5 — Molecular Structure and Spectroscopy: Lyngby, Denmark, 19-22 August 1983

A document on *Descriptive classification of the electron spectroscopies* (H. G. Porter and D. W. Turner) was approved for publication. A provisional paper on *Recommendations for creating computerized data banks on molecular spectroscopy* (V. Koptug) was completed for publication in *European Spectroscopy News* and *Applied Spectroscopy*, from which it is hoped that additional comments will be received. This is an umbrella document and the specifications for the publication of spectra from the different spectroscopies for data banks will be published at later dates. In conjunction with this project, a new project was initiated on the *Update of the specifications for the publication of infrared reference spectra* under the coordination of J. G. Grasselli. A document on *Names, symbols, definitions and units of quantities in optical spectroscopy* (N. Sheppard, H. A. Willis and J. C. Rigg) was approved for publication; this

document was prepared collaboratively with Commission VII.2.

The Subcommittee on Infrared and Raman Spectroscopy completed three projects which were approved by the Commission for publication in PAC. The first report on *Specifications for infrared reference spectra of molecules in the vapor phase* (R. N. Jones) was prepared in collaboration with the Coblenz Society. The second one on *Test data for normal coordinate calculations* (M. Tasumi) provides the appropriate structural and force constant data for the following five molecules: H₂O, CH₃Cl, CH₄, CCl₂CH₂ and C₅H₈O, which can be used for testing normal coordinate programs. The third report on *Recommendations for symbols and nomenclature in Raman spectroscopy* (J. R. Durig) provides some standardizations in this field. The progress on two projects, *Glossary of terms and usage in laser spectroscopy applied to chemistry* (G. Zerbi) and *Recommendations for the presentation of molecular parameter values for infrared and Raman intensities derived both from experimental and from ab initio calculations* (G. Zerbi and W. B. Person), was reviewed and found to be satisfactory, with expected completion dates of 1985 and 1984, respectively. Appropriate arrangements were made to update the *Tables of wavenumbers for the calibration of infrared spectrometers* (A. R. H. Cole).

The Subcommittee on Mass Spectroscopy completed the report *Proposed recommendations for nomenclature and symbolism for mass spectroscopy* (J. F. J. Todd) which is a single comprehensive document for the purpose of replacing earlier publications on this subject. A new project on *Secondary ion mass spectroscopy* (J. F. J. Todd) was initiated. The Subcommittee on Chiroptical Phenomena (ORD-CD) provided a document on *Chiroptical techniques: Nomenclature, symbols, units* (G. Snatzke) which was approved for publication. The Subcommittee on Notations and Conventions for Molecular Spectroscopy (C. J. H. Schutte) provided a progress report on their recommendations and the first two sections on general spectroscopic notation and symmetry notation were complete. The Commission voted to publish these recommendations in parts, approved the publication of the first two parts and requested the Subcommittee to complete the sections on vibrational notation, electronic notation, and rotational notation for the next IUPAC meeting in 1985.

Additional new projects were initiated on *Quality standards for ESR spectroscopy* (Hideo Kon) and *Secondary standards for intensity measurements in infrared spectroscopy* (R. N. Jones) with expected completion dates of 1985. The Commission will evaluate the need and feasibility of initiating additional projects on *Recommendation of nomenclature and symbols for non-linear Raman spectroscopy* (Durig, Person and Grasselli), *Specifications for the publication of mass spectral data in computerized data banks* (J. F. J. Todd) and *Specifications for the publication of NMR data in computerized data banks* (J. G. Grasselli and N. Zumbulyadis).

J. R. Durig

GETTING ABOUT IN DENMARK



by train

Most IUPAC
people
travelled —



or bus

— but some were different



Executive Secretary Dr. M. Williams.



Bureau Member Prof. C. G. Overberger.

Commission IV.2 — Polymer Characterization and Properties: Lyngby, Denmark, 21-22 August 1983

1. Working Party reports

(i) *Characterization and Properties of Commercial Polymers* — Dr. H. H. Meyer. Membership was constant at 31, roughly equally split between academia and industry. The five papers below have been published since the Leuven meeting (1981), the last three being from the current year.

Structure and properties of uni- and biaxially oriented polyethylene films. Part 2: Mechanical and other end-use properties.

Pure and Applied Chemistry, Vol. 54, pp. 647-670 (1982).

Constitutive equations from Gaussian molecular network theories in polymer rheology.

Pure and Applied Chemistry, Vol. 54, pp. 1349-1359 (1982).

Influence of acrylic processing aids on the rheology and structure of polyvinyl chloride.

Pure and Applied Chemistry, Vol. 55, pp. 177-190 (1983).

Collaborative research on polymeric materials through IUPAC.

Pure and Applied Chemistry, Vol. 55, pp. 755-764 (1983).

A collaborative study on the relation between film blowing performance and rheological properties of two low-density and two high-density polyethylene samples.

Pure and Applied Chemistry, Vol. 55, pp. 943-976 (1983).

Some of the programmes were now experimentally complete. A number of Subgroups of the Working Party were working on a geographical basis to reduce international travel costs. Most successful to date is the Asian Subgroup which has nine members and is expecting to publish its first paper before the end of 1983. Preliminary meetings have been held to form a nucleus of an East European Subgroup. The Commission insisted that these Subgroups must operate within the spirit of IUPAC, with access to the meetings by other IUPAC scientists wishing to cooperate actively.

The Subgroup on PVC (Dr. A. Michel) has now produced five reports for publication, after editing. A number of interesting new programmes are to be discussed at the next meeting in Ludwigshaven.

(ii) *Molecular Characterization of Commercial Polymers*. Mr. P. Starck, having taken over the Chairmanship, presented the report. The number of active members remained at 15, and the main meeting of the year had been held in April at DSM, Geleen, The Netherlands. A final report on the characterization of ethylene-propylene block polymers had been circulated by Dr. Simonazzi prior to publication. A second programme of work on low density poly(ethylene) aimed at investigating structural variation with molecular weight has commenced with excellent response. The linear low density poly(ethylene) programme is continuing and again focusing attention on fractionation followed by structure determination. The next meeting is scheduled for 17 May 1984 in Gothenburg.

The Subgroup on Rubber Characterization is still not fully in existence and the Commission is most anxious to find a suitable Chairman. Co-operating scientists would be approached. The Subgroup work on the Characterization of Poly(electrolytes), was reported by Prof. Mandel. Results from ten laboratories have been received on the monodisperse sulphonated poly(styrene) (sodium salt). Light scattering data were in good agreement with about $\pm 10\%$ statistical deviation. Viscosity data were also obtained. The main error had been in estimating the residual water content, and the present work is aimed at evaluating this accurately followed by recalculation of the original results. Work has been entirely by correspondence.

(iii) *Supported Polymer Films*. Prof. Dulog supplied a full written report. The activities on Surface Properties were now incorporated into the work of Dr. Zorll's Subgroup. Two meetings had been held during the year, in Zurich (April) and in Liege (May). Membership was constant and was very active.

A final draft report on the adhesion project had been received ready for publication in 1983. The Commission expected this work to continue for a second stage. The project on characterizing amino resins is continuing but has to overcome a number of difficult experimental problems. The emulsion results are now all available and a report summarizing the findings is being drafted.

The programme led by Dr. Kooistra "Characterization of Cure Coating in Relation to Performance Properties", has now started.

(iv) *Thermal Properties of Polymers* — Prof. Hinrichsen. The number of cooperating laboratories was constant at 30 with a world-wide spread. The main meeting was held in Amherst in parallel with the 1982 IUPAC meeting, when nine members attended. Recently four different commercial samples of poly(styrene) have been sent to the cooperating companies. The meeting urged that a deadline be put on the date for result submission.

(v) *Kinetic Parameter for Free-Radical Polymerization* — Dr. G. Eastmond. Good progress is being made in the more limited programme necessitated by monomer parity problems. GPC analysis has also been improved at the extreme molecular weights. Results on both PMMA and PS will be analysed before the spring meeting 1984. A publication of the techniques developed and the results will then be possible. There was a chance of active participation from Czechoslovakia. Prof. Sheppard has been kept informed of progress in view of possible Chemical Kinetics Commission activities.

2. Critical Assessment

The method of working of the Working Parties was discussed in the context of the critical assessment comments by IUPAC and the detailed Working Party reports. Prof. Kabanov and Prof. Bamford both made the point that in terms of results the Division was the most cost-effective in IUPAC. It was decided that projects listed by IUPAC should always be formulated with limited enough objectives that a report and publication could be produced within a few years. In many cases this would be a part of a longer term and broader programme. Working Parties,

once they had gained momentum, worked very well; any problems the Commission had experienced were related to developing new Working Parties internationally.

3. New Programmes

Eleven possible new areas of current significance were reported on, briefly, by designated Commission members. Two projects were considered sufficiently timely that they should be investigated in depth so that a decision could be taken at the next meeting. It was agreed that Dr. Anderson and Prof. Platé should report on "Liquid Crystalline Polymers" and that Prof. Bamford should report on "Biocompatibility of Polymers" with particular reference to establishing data and *in vitro* tests.

Four further areas were considered very important but needing further clarification in detail. These were Electrical/Dielectric Properties, Composites, Ageing and Optical Properties. The following agreed to help report on these areas at the next meeting: Drs. Mazur, Frommer, Wetton and Profs. Becker and Seferis. The Chairman agreed to look into methods for seeking outside opinions on new projects for consideration.

The IUPAC *Solubility Data Series* was briefly discussed. Although members agreed that reliable detailed data on solubility of polymers would be valuable, tremendous problems were posed by the difficulty of finding/producing results on sufficiently well-characterized systems. Prof. Wolf was made aware of this and given three names of experts whom the Commission thought he should consult.

4. As minuted in 1(i) the Chairman of the Commission and Working Party would ensure that Subgroups operated within the spirit of IUPAC. In discussion on detailed co-ordination, there were common areas in poly(ethylene) work in IV.2.2 and in the Asian Subgroup of IV.2.1 and in addition these samples would be valuable for the thermal properties Working Party. Mr. Starck would let Prof. Hinrichsen know if fractions could be made available. The PVC Subgroup under Dr. Michel were encouraged to condense the existing reports for publication in one issue of *Pure and Applied Chemistry*.

5. Budget

The Chairman reported the present unexpected situation due to the demise of working party IV.2.6 and fewer meetings than projected required to coordinate work in IV.2.4 and IV.2.5. Funds would be requested to support a two-day meeting next year in northern Europe and to support existing Working Parties and to allow two new starts to be made in 1984.

6. Terms of reference

The terms of reference for Commission IV.2 were raised by Prof. Bamford and within the Macromolecular framework, the following was agreed:

Through collaborative study to obtain data and understanding on the relationships between molecular structure, production processes, morphology and properties of polymeric materials, in order to promote their wider and more effective use.

7. Membership

Titular members Dr. Scholte and Prof. Clark had resigned since the last meeting. It was agreed that Mr. P. Starck (Finland) as Chairman of Working Party IV.2.2 should be nominated as a Titular Member. It was agreed that Prof. G. Seferis and Prof. B. Anderson, both of the USA, should be proposed as new Associate members.

8. Affiliate Membership

The idea was thought good. However, there was unanimous agreement that individual scientists would want to be affiliated basically to a *Division* and any structure should allow this.

9. International Standards Organisation

The Commission were still of the opinion (expressed in Leuven) that, through the Working Party members, many contacts existed. Commission IV.1 might therefore unwillingly overlap more easily than IV.2. There was no objection to an observer being present either way round.

10. IUPAC Publications

A. *Chemistry International* was considered acceptable provided it was *not* being a financial burden on IUPAC. If it was, a cheaper "broad sheet" would be adequate.

B. *Current Programmes* was considered a very necessary publication. The meeting urged most strongly that all Commission and Working Party Chairmen and Secretaries be listed.

11. The next meeting would be held in mid-September 1984 in Northern Europe (probably Paris) and will, if possible, precede the IUPAC Symposium in Belgium.

R. E. Wetton

Commission V.1 — Analytical Reactions and Reagents: Lyngby, Denmark, 20-22 August 1983

1. Membership changes

J. Inczédy, Chairman, and G. den Boef for different reasons could not continue their Titular Membership of the Commission, the Chairman having completed his 8 years of service and the Secretary being nominated Division Secretary.

L. Sommer and D. Thorburn Burns were elected Titular Members and J. Inczédy was elected Associate Member, all for the period 1983-1987.

G. Ackermann and D. Thorburn Burns were elected as new Chairman and Secretary respectively.

2. Four reports have been or will be published in *Pure and Applied Chemistry* in 1984. Within 2 years it is to be expected that the following projects can be completed and will lead to a publication:

- Spectrophotometric and fluorimetric determination of trace elements in natural waters (Division project);
- Characterization of spectrophotometric methods;

- (c) Metal buffers;
- (d) Acid-base indicators;
- (e) Classification of interferences.

3. New projects

- (a) New applications of existing organic analytical reagents;
- (b) Characterization of stationary phases for G C;
- (c) Terminology, classification and presentation of results in pattern recognition.

4. Next meeting: 2–3 September 1984, Cracow, Poland.

G. den Boef

Commission V.3 — Analytical

Nomenclature: Lyngby, Denmark,
19–23 August 1983

Membership

G. Svehla was elected Chairman and S. P. Perone Secretary, R. E. van Grieken and C. A. M. G. Cramers became Titular Members, L. Currie, G. G. Guilbault, M. A. Leonard, D. E. Leyden and W. Simon new Associate Members, while K. Doerffel and H. M. N. H. Irving are new National Representatives.

Critical Assessment of Projects by the IUPAC Vice-President

Members noted with satisfaction that, as one of only two Analytical Chemistry Division Commissions, V.3 was rated as “excellent” in the recent survey.

Status of Projects

Six projects were finalized at the meetings; the final drafts now have to be sent to 15 experts and three Editors. These are: (1) *Nomenclature of kinetic methods of analysis*; (2) *Nomenclature of information storage and retrieval*; (3) *Nomenclature of automated analysis*; (4) *Presentation of results of chemical analysis*; (5) *Chiroptical methods nomenclature*; (6) *Presentation of papers for publication in luminescence spectroscopy*. It is hoped that we can finish further projects at the Interim Meeting in 1984.

New Projects

Four new projects were initiated at Lyngby; these are (1) Nomenclature in evaluation of analytical methods; (2) Nomenclature of NMR and EPR spectroscopy; (3) Nomenclature of thermometric and enthalpymetric methods; (4) Nomenclature of electrochemical separation techniques.

Proposed Interim Meeting

A meeting on Sunday, 28 October 1984 has been arranged to coincide with the Centennial celebrations of AOAC and with the second Harmonization of Collaborative Analytical Studies Symposium. It is hoped that five Titular Members, most of the American and three European Associate Members will be able to participate.

Chemistry International

Members of the Commission were in favour of having the Journal retained, though, in general, found the old style more satisfactory. Three topics were singled out as suggested new features in the Journal: (1) Chemistry in developing countries, (2) Chemical education in general and (3) Highlights of current research topics.

G. Svehla

Commission V.5 — Electroanalytical

Chemistry: Lyngby, Denmark,
19–22 August 1983

Projects

The following new projects were initiated:

1. Evaluation of standard potentials from EMF data in non-aqueous and mixed solvents by extrapolation.
2. Critical comparison of voltammetric carbon indicator electrodes.
3. Determination of pH in natural waters.
4. New definition of polarography.
5. Publication of selected IUPAC reports in translation in the People's Republic of China.

The continuing projects listed below were reviewed:

- a. Thermodynamic constants of individual ionic species.
- b. Voltammetry of glassy carbon electrodes.
- c. Mediators in spectroelectrochemistry.
- d. Oxidation-reduction potentials in aqueous solutions.
- e. Procedures for testing pH-responsive glass electrodes.
- f. Response time of ion-selective electrodes and potentiometric cells.
- g. Electroanalytical chemistry of sulfur components in new coal conversion technologies.
- h. Standard systems for heterogeneous charge transfer rates.
- i. Chemically modified electrodes.
- j. Voltammetry at interfaces between immiscible solvents.
- k. Criteria for standardization of pH measurements in water-rich mixed solvents.
- l. Purification of solvents for electroanalysis.
- m. Acid-base dissociation constants in dipolar aprotic solvents.
- n. Standard potentials of amalgam electrodes and activity coefficients of metals in mercury.

Highlight Accomplishments

Culminating 6 years of cooperative efforts with Commission I.3 (Electrochemistry), a provisional report is being published in *Pure and Applied Chemistry — Definition of pH scales, standard reference values, measurement of pH and related terminology*.

A similar long-range effort updating Latimer's classical monograph on Oxidation-Reduction Potentials is nearing completion. It will be published as a *Selective and Critical Source-Book in Oxidation-Reduction Potentials in Aqueous Solutions* (approximately 550 pages).

Officials of the Commission

Profs. J. Jordan and K. Izutsu will continue to serve as Chairman and Secretary until 1985. Likewise, Prof. W. Nürnberg will continue to be Chairman of the Subcommittee on Electroanalytical Methods of Environmental Trace Analysis.

Next Meeting

A 2-day meeting will be held in Europe (exact location and dates will be announced in November 1983).

J. Jordan

Commission V.6 — Equilibrium Data:

Lyngby, Denmark, 20-22 August 1983

Compilation of Stability Constants

Compilation of stability constants of metal complexes with organic ligands covering from 1974 to 1982 and with organic ligands over 1974-1982 is going well with compilers for various regions. The computer storage program is also being made by Prof. I. Grenthe and Dr. L. D. Pettit in order to test it by using some of the data.

Ionization Constants of Acids and Bases

A volume comprising data for inorganic acids and bases over the period 1971 to 1980 was published by Pergamon in 1982. A volume comprising a supplement to the organic acids and bases is under way.

Critical Surveys of Stability Constants

Since the Leuven meeting in 1981, three papers have been published. Two other surveys are under preparation. Systems for halides, carbonates, sulfates, sulfides, and carboxylates have been proposed for survey.

Equilibrium Data for Trace Metal Ligand Interactions in Natural Waters

Five papers have been prepared by members of our Commission for this joint project. These concern the speciation in oceanic and estuarine waters.

New Projects

Two new projects have been proposed:

- (a) *Rationalization of ion exchange data* (Dr. E. Hogfeldt) in order to describe ion exchange data as a function of concentrations of components involved.
 - (b) *Interactions of metal complex equilibria with organic polyelectrolytes* (Dr. P. Valenta) is proposed to interpret the data existing for metal complexes of organic polyelectrolytes especially nucleic acids, enzymes and other proteins.
-

Commission V.8 — Solubility Data:

Lyngby, Denmark, 19-22 August 1983

Commission V.8 had 43 members in attendance during its sessions at the General Assembly. The Chairman reported that to date 13 volumes of the *Solubility Data Series* had been published. Another two were at the publisher, and the final three manuscripts, making up the original set of 18 volumes, would be delivered to the publisher in 6 months. The passing of this milestone will necessitate a new agreement to be drawn with the publisher. The details of this new agreement were discussed in the Commission and also with the IUPAC Committee on Publications. The Commission awaits approval from IUPAC to begin negotiations.

The Task Group considering the automation of operational procedures for producing camera-ready copy reported that it was seeking demonstration of the Wang word processor which was compatible with the Pergamon system. Further need for sophistication in the word processor was introduced when the Commission learned of the role it might play in producing a magnetic tape containing the numerical and other pertinent data suitable for on-line interactive systems. This possible requirement arose from a meeting with the Subcommittee on Numerical Data Bases chaired by Prof. Schneider. The Commission is now on record as wishing to be part of the pilot effort in this area.

New data compilation activities were reported by the Subcommittee Chairmen. At least 15 new subject areas will be entered. The general Guidelines for producing numerical data volumes have been completed and a manuscript will be sent to the publisher in the near future. Similarly details for a Symposium on Solubility Phenomena are progressing, for August 1984. The organizing committee has been active and a first announcement is due shortly.

Additional manuscripts are in process. It is estimated that an additional four manuscripts will be submitted to the publisher in 1984. A meeting of Commission V.8 is contemplated in 1984 to be held in conjunction with the Symposium on Solubility Phenomena.

A. S. Kertes

Commission VI.2 — Biotechnology:

Lyngby, Denmark, 20-21 August 1983

The Commission met for 2 full days during the Lyngby meeting to discuss its future programs. It was noted that the nomenclature for biotechnology published by the Commission is beginning to receive wide distribution and has been translated into several languages. Plans for the 7th International Biotechnology Symposium (IBS) in New Delhi during February 1984 are progressing well; it was also decided to recommend that the 8th IBS be held in Paris, France, in 1984. Two projects reached the state of final draft preparation for submission for

publication. One project sets forth standards for mycoinsecticides and the other standardizes several important assays for analysis of cellulases.

Several new projects have been initiated and include: standards for bacterial insecticides, assay of hemicellulases, standard methods for validation of sterilizing air filters, standard methods for evaluating membrane devices for concentration of microbial and tissue cells and recommending methods for characterization of agricultural residues and protein products derived therefrom. The Commission thoroughly discussed its goals and objectives and reaffirmed its commitment to rapid completion of projects. The new Officers and Titular Member are: Prof. C. L. Cooney, Chairman; Dr. M. Ringpfeil, Vice-Chairman; Dr. G. Stewart, Secretary; Prof. T. K. Ghose. The Associate Members are: Prof. M. Linko, Dr. P. Gray and Dr. R. Righelato.

C. L. Cooney

Commission VI.3 — Oils, Fats and Derivatives: Lyngby, Denmark, 19-21 August 1983

Results and activities of the Working Groups (WG)

WG 4: *Determination of chlorinated pesticides in woolwax*: This project was closed during the Zeist meeting and the final report of the coordinator, Dr. Zwerenz, relating to the results of the collaborative study has been sent to the relevant authorities and will be published soon.

WG 8: *Identification and determination of emulsifiers derived from fatty materials*: Gathering information and results obtained over the last few years, H. Brüscheweiler presented methods of analysis for four types of emulsifiers —

- Method for the determination of the composition of emulsifiers after hydrolysis and silylation by gas-liquid chromatography. This method has been adopted and H. Brüscheweiler will prepare a report of collaborative results. Both documents will be published in *Pure and Applied Chemistry*.
- Method for the determination of anionic emulsifiers and surfactants (laurylsulfate, dioctylsulfosuccinate, alkylbenzenesulfonates).
- Method for the determination of nonionic emulsifiers (ethoxylated and propoxylated compounds).
- Method for the determination of components of emulsifiers (mono-, diglycerides and other emulsifiers) by gas-liquid chromatography.

H. Brüscheweiler will organize a ring test for these last methods. For method (c) he will point out in the draft the specificity of the separation emulsifier/fatty materials.

WG 13: *Determination of undesirable plastic-based contaminants (other than polyethylene in oils and fats)*: Several reasons were in favour of abandoning the investigations: lack of legal maximum level for monomers; weak value of vinylchloride monomers in the polymer; practical absence of acrylonitrile in fatty materials packaging. Nevertheless a problem

subsists for styrene monomers and one must keep in mind the difficulties of determining a plastic monomer in fatty materials.

WG 3/78: *Determination of polycyclic aromatic hydrocarbons*: G. Ostermann has made a survey of the several methods published recently. It seems difficult to unify these methods. D. Firestone suggested getting in touch with the Food Commission which already has expertise of the determination of these compounds. It should be interesting to have a method appropriate for fat products but of common interest for both Commissions and to carry out a ring test. G. Ostermann will present a method with a suitable extraction step for fats.

WG 1-79: *Determination of erythrodiol in virgin and solvent-extracted olive oil*: J. Gracian Tous was not able to attend the meeting but his statistical evaluation of the results was discussed by D. Firestone and it appears necessary to recalculate some values. Nevertheless the method adopted last year remains valid, taking into account some amendments proposed by D. Pocklington and relating to the expression of the results. It will be published in *Pure and Applied Chemistry*. As soon as possible, the text of the method will be sent to Codex, which requested this investigation, and International Olive Council (IOC) which is awaiting our advice. Further, D. Pocklington will prepare a report of the collaborative results which will be published in *Pure and Applied Chemistry*.

WG 2-79: *Total and quantitative determination of sterols*: Results are satisfactory. A statistical evaluation has been made by M. Naudet. The method and the results of the collaborative study will be published in *Pure and Applied Chemistry*. This project has been completed.

WG 3-79: *Determination of mineral oil residues in oils and fats*: P. Hendrikse commented on results obtained during last year from a ring test organized by NNI. He wanted to check the two methods used for one more year within NNI before submitting them to the Commission. He will give a report next year.

WG 1-80: *Transfer of fats and oils methods to phospholipids analysis*: Due to a lack of samples no analyses have been carried out this year but R. Ohlson will pursue the ring test next year. Special attention will be paid to the determination of acid values of acetone-soluble and insoluble fractions of lecithins.

WG 2-80: *Determination of total phospholipids*: Concerning the determination of the acetone-insoluble fraction, results of collaborative study are satisfactory and the method was adopted. Both method and report of study will be drafted and published, if possible simultaneously. Concerning the determination of the toluene-insoluble fraction, results were not satisfactory and Ö. Levin suggested continuation of this part of the project for one more year. He will send out samples and organize a ring test.

WG 3-80: *Qualitative and quantitative determination of phospholipids and determination of phosphorus content*: Results of collaborative study show that reproducibility was unsatisfactory. J. Beare-Rogers will organize a new ring test of the TLC method, taking into account remarks expressed.

WG 1-81: *Determination of solvent residues in cake*: J. P. Wolff pointed out the great differences observed between results obtained according to the AFNOR method, in an AFNOR-IUPAC ring test, and those obtained according to the DGF method. A long discussion took place in order to clarify the aims of these methods and the meaning of the solvent (hexane) contents expressed. Finally it was agreed to adopt both methods. The AFNOR method as it is and the DGF method after a new ring test, as there was an insufficient number of collaborators this year. It was decided that when publishing these methods one should clearly mention that the AFNOR method (temperature 100°C and addition of water) gives the "total" hexane content and that the DGF method (temperature 80°C, no addition of water) gives a "free" hexane content, sufficient for present commercial purposes. Determinations of other solvents could be considered next meeting.

WG 2-81: *Determination of triglycerides composition*: Results presented by D. Pocklington relating to this profile analysis (carbon number) are satisfactory. A final draft of the method and a report of the collaborative results will be prepared by D. Pocklington for publication.

WG 1-82: *Determination of thiobarbituric acid value (TBA-value)*: Investigation of variables in the TBA-value, conducted by J. Pokorný, has given results having a satisfactory repeatability comparable with that of other, more complicated, procedures for the determination of the TBA-value. During the coming year a pre-collaborative test will be carried out.

WG 1-83: *Determination of n-3 fatty acids in dietary fats*: A method announced by J. Beare-Rogers in her report appears promising and a pre-collaborative test will be carried out.

New projects

Several new projects were presented and will be submitted for approval (in brackets, WG number and name of WG chairman, if approved):

Determination of solvent residues in oil (WG 2-83; J. P. Wolff)

Determination of butyric acid in butterfat (WG 3-83; D. Pocklington; liaison with IDF-FIL)

Determination of tocopherols by HPLC (WG 4-83; D. Pocklington).

Determination of iron, copper and nickel content by atomic absorption (WG 5-83; P. Hendrikse).

The AOAC method for determination of antioxidants by HPLC will be examined by the Commission in order to consider adoption next year.

Standard Methods for the Analysis of Fats and Oils

A republication of methods presently included in the 6th Edition will occur in the very near future. It will be presented for sale in two parts, one corresponding to methods included in the book edited in 1979, the other gathering in a classified form methods which have been published since 1979, in *Pure and Applied Chemistry*, as Parts 1 to 6 of the 1st Supplement to the 6th Edition.

Other business

The following were elected as the new officers of the Commission: Prof. M. Naudet (Chairman); Dr. A. Hautfenne (Vice-Chairman); Mr. D. Pocklington

(Secretary). The next meeting of the Commission will take place in 1984, at invitation of the Finnish delegation, in Turku (Finland).

A. Hautfenne

Commission VI. 5 — Pesticide

Chemistry: Lyngby, Denmark

19-23 August 1983

1. Membership

The Commission membership will, henceforth, consist of 6 Titular and 12 Associate Members as required by the Bureau, following completion of amalgamation of the two Pesticide Commissions together with attribution of members. The terms of office of N. Drescher, R. Engst, P. A. Greve, P. C. Kearney, M. Klisenko, J. Miyamoto, G. G. Still, I. S. Taylor, H. P. Thier and S. L. Vitorovic were completed in 1983. J. A. R. Bates was elected as Chairman and R. Grenhalgh as Secretary. Three Associate Members, N. Aharonson, A. Ambrus and W. Klein were appointed Titular Members. Twenty-eight nominations were received for membership from which seven Associate Members were selected to fill the vacancies. These were S. Otto (FRG), J. Kurihara (Japan), R. Hollingworth, W. Neely, J. Seiber, D. B. Sharp (USA), and L. A. Golovleva (USSR). In addition it was agreed that the following nominees, Z. Lee (China), J. Kovacicova (Czechoslovakia), S. K. Mukerjee (India), J. Miyamoto (Japan) and P. C. Kearney (USA), be proposed as National Representatives.

2. Reports

Three projects entitled Improved, Cost/effective Approaches to Residue Analysis, (carried over from Kyoto), Definition and Description of Non-extractable Residues in Plants and Soil (7/81) and Critical Evaluation of Model Ecosystems (8.1/81) will be prepared for publication in *Pure and Applied Chemistry*.

3. Projects in progress

Eight projects (8.2/81, 15/83, 16/83, 17/83, 18/83, 19/83, 20/83 and 21/83) are currently under discussion. The titles of 17/82 and 18/82 were changed to Recommended Approaches to the Validation of Animal Metabolism and Interpretation and Optimum Use of Residue Data, respectively, to reflect better the Commission's view on the proposed contents.

Three new projects were initiated: Recommended Approaches to the Measurement of Exposure of Workers to Pesticides (19/83), Microbial Adaptation to Pesticides (20/83) and Confirmatory Techniques of Pesticide Residues (21/83). In addition, two exploratory projects were initiated: Stereochemical Nomenclature of Pesticides and Impurities in Organophosphorus Pesticide Technical Products. Draft papers will be prepared for 1984.

4. 6th International IUPAC Congress on Pesticide Chemistry

Aspects of the organization and programme of the 5th Congress, held in Kyoto 1982, were reviewed. The 6th Congress will be held in Ottawa, Canada, 10–17 August 1986. A proposed programme for the 6th Congress was discussed. Its theme will be "Food Production and Environmental Exposure". Eight main topics were proposed: Synthesis of pesticides and bioregulators; Chemistry and bioactivity of natural products; Chemical structure/activity correlation; Formulation chemistry and technology; Pesticide residues, methodology and levels; Environmental fate and effects; Metabolism in plants, animals and soils; Hazard evaluation.

5. Miscellaneous

The Chairman and Secretary met with the Commission of Food Chemistry and discussed projects. Lists of Commission publications will be exchanged and liaison maintained.

The Commission drafted its objectives (Appendix) and agreed that members could comment to the Chairman on the content.

6. Next meeting

The next meeting will be held in Frankfurt, FRG, late July/early August 1984.

R. Greenhalgh

Appendix — Objectives of the Commission on Pesticide Chemistry

1. *The aim of the Commission is to examine critical issues raised by the use of pesticides as related to the health of mankind and the safety of the environment. Members are drawn from industry, governments and universities, thus providing a wide range of expertise which is utilized to recommend approaches and to harmonize views on a variety of pesticide problems.*

Topics examined include fundamental aspects of the chemistry of pesticides, their fate in food and the environment, methods of trace analysis, metabolism in animals, plants, soil and water.

2. *The Commission organizes an International Congress every 4 years to provide a forum for scientists to discuss recent advances in pesticide chemistry. The Commission has an active publication policy and also interacts with international organizations such as FAO, WHO, IAEA, UNIDO and CODEX, together with national pesticide registration agencies.*

Commission VII. 1 — Automation and Clinical Chemical Techniques:

Lyngby, Denmark, 21–22 August 1983

1. The draft document *Nomenclature for Automated Analysis*, produced jointly with Commission V.3, has been reviewed considering comments from 11 experts. The revision will be finalized during the next two months.

2. *New projects* were started jointly with Commission V.3:

- (a) Electronic data processing and micro-processors in analytical and clinical chemistry.
- (b) Bioanalytical nomenclature — general terminology; classification of analyzers; problems encountered with carry-over effects. For this task, ECCLS will be asked for support (e.g. by forming a working group).

3. Next meetings of the Commission:
1984, 14–15 October, Barcelona (E),
1984, 3 May, Rio de Janeiro (B) and
1985, August, Lyon (F) jointly with
Commission V.3.

R. Haeckel

Commission VII. 4 — Toxicology:

Lyngby, Denmark, 19–21 August 1983

Reports of Subcommittee Activities

Aluminium: Two conferences have been held over the past 12 months dealing with aluminium toxicology. These conferences were organized jointly by the Subcommittee and other groups: (1) An International Workshop on the Role of Biological Monitoring in Prevention of Aluminium Toxicity in Man: Aluminium Analysis in Biological Fluids, Luxembourg, 5–7 July 1982, organized jointly with the C.E.C. (2) Aluminum Analysis in Biological Materials, Charlottesville, Virginia, USA, 29–30 June 1983, organized jointly with The Aluminum Association Inc. and the University of Virginia. A summary of the first meeting has been published and the Proceedings of both Conferences are in press. Work is continuing in the development of reference methods for aluminium. Interlaboratory surveys have been started.

Cadmium: A Workshop on Biological Indicators of Cadmium Exposure: Diagnostic and Analytical Reliability, was held in Luxembourg, 1–9 July 1982, organized jointly by the Subcommittee and the C.E.C. Proceedings of the analytical papers are being prepared for publication. A manuscript summarizing results of interlaboratory surveys on Cd in whole blood will be submitted to *Pure and Applied Chemistry*. A reference method for Cd in whole blood is almost completed. Work in β_2 -microglobulin methods is under way.

Nickel: A direct method for measuring Ni in serum has been developed by a Subcommittee member, and correlates closely with the Subcommittee's reference method. A second draft of the document on *Collection, storage and transport of samples* has been prepared. The 3rd International Conference on Nickel Toxicology will be held in Paris, 3–7 September 1983.

Selenium: Results of the first interlaboratory survey were presented at COMTOX 83 in Montreal, July 1983, and a paper will be submitted soon to *Pure and Applied Chemistry*. Future plans are to study the toxicity and essentiality of selenium.

Chromium: A formal proposal to form this Subcommittee, under the chairmanship of Dr. D. Shabcott, will be made. Seven other potential members of this Subcommittee have been identified.

Second International Conference of Clinical Chemistry and Chemical Toxicology of Metals, Montreal, 19-22 July 1983

The Conference was a success, attracting approximately 250 participants, with 15 plenary lecturers, 96 contributed papers, 26 posters, and 10 commercial exhibits. The Proceedings will be published by Academic Press and will contain 60 manuscripts.

New projects

A draft manuscript has been prepared by Drs. Aitio

and Järvisalo on a Review on Specimen Collection, Handling and Storage in Biological Monitoring of Occupational Exposure.

Other Business

Expansion of activities in areas other than the toxicology of metals was discussed. Dr. Stoeppler will prepare a position paper proposing a new Subcommittee(s).

Next Meeting

The next meeting of the Commission will be held in Paris, 2-7 September 1984.

J. Savory

IUPAC CONFERENCES

1984

BIOTECHNOLOGY

February 19 - 25. 7th International Biotechnology Symposium. New Delhi, India.

(Prof. T. K. Ghose, Chairman, National Organization Committee & Head, Biochemical Engineering Research Centre, Indian Institute of Technology, Hauz Khas, New Delhi-110029, India.)

HIGH TEMPERATURE MATERIALS

April 2-6. 4th International Conference on High Temperature and Energy Related Materials. Santa Fe, New Mexico, USA.

(IUPAC High Temperature Conference, Mary Bowen, Los Alamos National Laboratory, CHM-DO, Mail Stop J563, Los Alamos, NM 87545, USA).

SOURCES OF ORGANIC MATERIALS

June 25-29. Resource Material Conversion to meet Future Needs — (Bio-) Chemical Process Bridges, CHEMRAWN III. The Hague, The Netherlands.

(Congress Bureau, QLT Convention Services, Keizersgracht 792, 1017 EC Amsterdam, The Netherlands.)

CARBOHYDRATES

July 1-7. 12th International Carbohydrate Symposium. Utrecht, Netherlands.

(Dr. J. P. Kamerling, Department of Bio-Organic Chemistry, University of Utrecht, Croesestraat 79, NL-3522 AD Utrecht, Netherlands.)

CATALYSIS

July 2 - 6. 8th International Congress on Catalysis. Berlin, Federal Republic of Germany.

(DECHEMA, P.O. Box 970146, D-6000 Frankfurt am Main 97, Federal Republic of Germany.)

MEDICAL POLYMERS

July 9-12. 26th Prague Microsymposium on Macromolecules: Polymers in Medicine and Biology. Prague, Czechoslovakia.

(26th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

NATURAL PRODUCTS

July 9 - 14. 14th International Symposium on the Chemistry of Natural Products. Poznań, Poland.

(Prof. dr. Maciej Wiewiorowski, Institute of Bioorganic Chemistry, Polish Academy of Sciences, ul. Noskowskiego 12/14, 61-704 Poznań, Poland.)

MACROMOLECULES

July 16-19. 27th Prague Microsymposium on Macromolecules: Physical Optics of Dynamic Phenomena and Processes in Macromolecular Systems. Prague, Czechoslovakia.

(27th Microsymposium, PMM Secretariat, c/o Institute of Macromolecular Chemistry, Czechoslovak Academy of Sciences, 162 06 Prague 616, Czechoslovakia.)

COORDINATION CHEMISTRY

July 29-August 3. 23rd International Conference on Coordination Chemistry. Boulder, CO, USA.

(Prof. Cortlandt Pierpont, Secretary 23rd International Conference on Coordination Chemistry, Campus Box 215, University of Colorado, Boulder, CO 80309, USA.)

CHEMICAL THERMODYNAMICS

August 13-17. Conference on Chemical Thermodynamics. Hamilton, Canada.

(Dr. P. A. G. O'Hare, Argonne National Laboratory, Chemical Technology Division, 9700 South Cass Avenue, Argonne, IL 60439, USA.)

PHYSICAL ORGANIC CHEMISTRY

August 20-24. 7th IUPAC Conference on Physical Organic Chemistry. Auckland, New Zealand.

(Prof. B. R. Davis, Chemistry Department, University of Auckland, Private Bag, Auckland, New Zealand.)

COLLOIDS AND MACROMOLECULES

August 22-24. International Symposium on Physical Chemistry of Colloids and Macromolecules. Uppsala, Sweden.

(Prof. B. Ranby, Department of Polymer Technology, Royal Institute of Technology, S-100 44 Stockholm, Sweden.)

ORGANIC SYNTHESIS

August 27–30. 5th International Conference on Organic Synthesis. Freiburg i. Br., FRG.
(Prof. H. Prinzbach, Chemisches Laboratorium, Albert-Ludwigs-Universität, Albertstrasse 21, D-7800 Freiburg i. Br., FRG.)

RAMAN SPECTROSCOPY

August 27–September 1. 9th International Conference on Raman Spectroscopy. Tokyo, Japan.
(Prof. Mitsuo Tasumi, Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo 113, Japan.)

REACTIVITY OF SOLIDS

August 27–September 1. 10th International Symposium on the Reactivity of Solids. Dijon, France.
(10e ISRS, Secrétariat Exécutif, Laboratoire de Réactivité des Solides, Faculté des Sciences Mirande, B.P. 138, F-21004 Dijon Cédex, France.)

LUMINESCENCE SPECTROMETRY

September 3–6. International Symposium on Quantitative Luminescence Spectrometry in Biomedical Sciences. Ghent, Belgium.
(Dr. W. R. G. Baeyens, Fakulteit van de Farmaceutische Wetenschappen, Laboratoria voor Farmaceutische Chemie en Ontleding van Geneesmiddelen, Harelbekestraat 72, B-9000 Gent, Belgium.)

AUTOMATION

October 15–18. 2nd International Congress on Automation in the Clinical Laboratory. Barcelona, Spain.
(The Secretary of the Second Congress, Dr. R. Galimay, Apartado de Correos 543, Barcelona, Spain.)

COLLABORATIVE CHEMICAL ANALYSIS

October 25–27. 2nd International Symposium on the Harmonization of Collaborative Analytical Studies. Washington, DC, USA.
(Dr. H. Egan, Laboratory of the Government Chemist, Cornwall House, Stamford Street, London SE1 9NQ, UK.)

1985

POLYMER ANALYSIS

February 11–14. POLYMER 85: Characterization and Analysis of Polymers. Melbourne, Australia.
(Dr. J. H. O'Donnell, Polymer & Radiation Group, Department of Chemistry, University of Queensland, Brisbane 4067, Australia.)

AROMATIC COMPOUNDS

July 15–19. 5th International Symposium on Novel Aromatic Compounds. St. Andrews, UK.
(Dr. P. J. Garratt, Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK.)

MACROMOLECULES

August 18–23. 30th International Symposium on Macromolecules. The Hague, Netherlands.
(Dr. J. A. M. Smit, Gorlaeus Laboratories, University of Leiden, Department of Chemistry, P.O. Box 9502, NL - 2300 RA Leiden, Netherlands.)

MASS SPECTROMETRY

September 8–13. 10th International Symposium on Mass Spectrometry. Swansea, UK.
(Prof. J. H. Beynon, Royal Society Research Unit, University College of Swansea, Swansea SA2 8PP, UK.)

CHEMICAL RESOURCES OF THE OCEAN

September 22–28. Chemical Resources of the Global Oceans — CHEMRAWN IV. Massachusetts, USA.
(J. R. Moore, Director, Marine Science Institute, University of Texas, Austin, TX 78712, USA.)

1986

PESTICIDE CHEMISTRY

August 10–17. 6th International Pesticide Chemistry Congress. Ottawa, Canada.
(Dr. H. V. Morley, London Research Station, Agriculture Canada, University Sub-Post Office, London, Ontario, Canada.)

PHYSICAL ORGANIC CHEMISTRY

August. 8th IUPAC Conference on Physical Organic Chemistry. Tokyo, Japan.
(Prof. M. Oki, Department of Chemistry, Faculty of Science, University of Tokyo, Tokyo 113, Japan.)

ICSU President

Prof. D. A. Bekoe (photo on p. 26 of *Chem. Int.*, 1983, No. 4) has resigned as President of ICSU on his appointment as Director of the UNESCO Regional Office for Science and Technology for Africa. Prof. Bekoe served in ICSU first as a Member of the Executive Committee, then as a Member of COSTED, then as Treasurer from 1974 to 1978, Vice-President 1978–1980 and President to date. He has been succeeded by the First Vice-President, Sir John Kendrew.



Sir John Kendrew, President of ICSU, was Director-General of the European Molecular Biology Laboratory since 1975 and assumed the Presidency of St. John's College, Oxford, UK, in April 1982.

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The International Union of Pure and Applied Chemistry (IUPAC), formed in 1919, is a voluntary, non-governmental, non-profit association of organizations, each of which represents the chemists of a member country.

Its objectives are:

to promote continuing co-operation among the chemists of the member countries;

to study topics of international importance to pure and applied chemistry which need regulation, standardization, or codification;

to co-operate with other international organizations which deal with topics of a chemical nature;

to contribute to the advancement of pure and applied chemistry in all its aspects.

The membership of IUPAC presently comprises 44 countries, each represented by a national organization, such as an academy of science or research council.

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